Results of a Three-Year (1996 to 1998) Limnological Study of Takla, Trembleur, and Stuart Lakes

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DEDICATION

We dedicate this report to the memory of Ken F. Morton. Ken was a dedicated and productive Fisheries and Oceans research biologist/limnologist, who made many contributions to the success of the Department including research on many of the sockeye populations and their rearing lakes in British Columbia. Ken passed away in May 2003 while carrying out research on Quesnel Lake. Ken had a strong dedication to fish habitat and the environment. He was well known for "getting the job done" even under difficult circumstances. Ken's wonderfully pleasant temperament, generous nature and dry sense of humour made him a pleasure to know and work with.

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ABSTRACT

Malange, K., Shortreed, K.S. and Morton, K.F. 2005. Results from a three-year (1996 to 1998) limnological study of Takla, Trembleur, and Stuart lakes. Can. Data Rep. Fish. Aquat. Sci. 1174: ix + 88 p.

Results of a three-year limnological investigation of three oligotrophic, sockeye nursery lakes in the Stuart system of British Columbia are reported. This investigation is part of a study to determine productive capacity and trophic status of the Stuart System lakes (Takla, Trembleur, and Stuart). We sampled a total of 10 locations in main basins of the lakes monthly (May-October) from 1996 to 1998, for physical, chemical and biological variables. Epilimnetic data, summarized for each station and date and seasonal means for each station and whole lake are presented in tables. Temperature profiles and selected seasonal data are shown graphically. Spring total phosphorus concentrations ranged from 3.1-7.3 µg/L in Takla Lake, 6.3-10.1 µg/L in Trembleur Lake, and 6.2-11.5 µg/L in Stuart Lake. Seasonal averages of epilimnetic chlorophyll were 0.83-1.49 µg/L, 1.24-1.66 µg/L, 1.58-2.65 µg/L in Takla, Trembleur, and Stuart lakes, respectively. Over the three year study, epilimnetic whole-lake seasonal average daily photosynthetic rates were 55 mg C/m^2, 84 mg C/m^2, and 137 mg C/m^2 in Takla, Trembleur, and Stuart lakes. Whole-lake seasonal average macrozooplankton (>250 µm) biomass was 562 mg dry wt./m^2 in Takla Lake, 1134 mg dry wt./m^2 in Trembleur Lake, and 1410 mg dry wt./m^2 in Stuart Lake.

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RÉSUMÉ

Malange, K., Shortreed, K.S. and Morton, K.F. 2005. Results from a three-year (1996 to 1998) limnological study of Takla, Trembleur, and Stuart lakes. Can. Data Rep. Fish. Aquat. Sci. 1174: ix + 88 p.

Nous présentons les résultats d'une étude limnologique triennale de trois lacs oligotrophes du réseau de la rivière Stuart, en Colombie-Britannique, où séjourne le saumon rouge. Cette étude s'inscrit dans le cadre d'une étude de plus grande envergure visant à établir la capacité de production et l'état trophique des lacs du réseau de la Stuart (Takla, Trembleur et Stuart). Au total, nous avons prélevé des échantillons mensuels (de mai à octobre de 1996 à 1998) à 10 stations dans les bassins principaux de ces lacs, en vue d'en établir les caractéristiques physiques, chimiques et biologiques. Nous présentons sous forme de tableaux les données épilimniques, résumées pour chaque station et date, et les moyennes saisonnières pour chaque station et lac, et, sous forme de graphiques, les profils de température et certaines données saisonnières. Au printemps, les concentrations de phosphore total allaient de 3,1 à 7,3 µg/L dans le lac Takla, de 6,3 à 10,1 µg/L dans le lac Trembleur et de 6,2 à 11,5 µg/L dans le lac Stuart. Les teneurs moyennes saisonnières en chlorophylle dans l'épilimnion allaient de 0,83 à 1,49 µg/L, de 1,24 à 1,66 µg/L et de 1,58 à 2,65 µg/L dans les lacs Takla, Trembleur et Stuart respectivement, alors que pour l'ensemble de la période de l'étude triennale, le rendement photosynthétique quotidien moyen saisonnier dans cette couche d'eau s'y chiffrait à 55 mg C/m^2, 84 mg C/m^2 et 137 mg C/m^2. La biomasse saisonnière moyenne du macrozooplancton (> 250 µm) dans l'ensemble du bassin lacustre s'élevait, en poids sec, à 562 mg/m^2 dans le lac Takla, 1 134 mg/m^2 dans le lac Trembleur et 1 410 mg/m^2 dans le lac Stuart.

INTRODUCTION

The Stuart lake system consists of a chain of 3 large lakes (Takla, Trembleur, and Stuart) which are located on the Nechako plateau in north-central British Columbia (Fig. 1). They comprise the most northerly sockeye salmon (*Oncorhynchus nerka*) nursery habitat in the Fraser River watershed. The Stuart system supports a number of different sockeye stocks which spawn in over 57 tributaries to the three lakes (Schubert and Fanos 1997). Sockeye return to the Stuart system on a 4-year cyclic basis with one dominant year (1985, 1989, 1993, 1997 etc.) followed by 3 off-cycle years of low spawner abundance. From 1973-1989, sockeye escapements to the Stuart system in dominant brood years averaged 528,041 (range = 264,646-960,610) (Fisheries and Oceans Canada, data on file in NuSEDS V2.0 (http://sci.info.pac.dfo .ca/sein_prod /Default.htm)). Off cycle years averaged only 96,952 (range = 15,648-287,109). In 1993, however, the escapement was far larger (2.49 million) than seen in other dominant years.

The trophic status and sockeye rearing capacity of the Stuart system lakes was unknown and given the large 1993 escapement there was concern that the rearing capacity could be exceeded. Limnological data on these lakes were very limited (Stockner and Shortreed 1983) and were not sufficient to determine trophic status or rearing capacity. Consequently, in 1996 we started an intensive three-year limnological study of the Stuart system lakes. Objectives of the study were to document the trophic status and sockeye rearing capacity of each of three lakes. These data and data collected during a concurrent study of the lakes' limnetic fish communities (MacLellan and Hume 2002) will be used to develop estimates of productive capacity and optimum escapements. They will also be used to develop recommendations for appropriate restoration strategies for the Stuart system lakes.

DESCRIPTION OF THE STUDY LAKES

The Stuart system lakes are located in British Columbia's Interior Plateau physiographic region with a portion of Takla Lake extending into the Cassier Columbia Mountains. The drainage basins lie within the Sub-boreal Spruce Biogeoclimatic Zone, with annual precipitation ranging from 40-75 cm (Farley 1979). The lakes are dimictic with extended periods of ice cover in the winter.

Takla Lake (55°15' N, 125°44' W) lies at 689 m elevation and is the most northerly of the Stuart system lakes. It is a large (surface area=246 km²) fjord-like lake with a mean depth of 107 m and a drainage basin covering 6,216 km² (Table 1). It has three arms which are separated by constrictions and shallow sills. The Driftwood River enters at the northern end of the lake and is the largest tributary. Takla Lake discharges at its southern end into the Middle River, which flows for approximately 37 km until it enters Trembleur Lake.

With a surface area of 116 km², Trembleur Lake (54°50' N, 125°05' W) is the smallest of the three Stuart system lakes. It lies at an elevation of 686 m, has a mean

depth of 40 m, and a drainage basin area of 8,547 km². Trembleur Lake consists of one main basin, which is aligned lengthwise in a west-to-east direction. The Tachie River leaves Trembleur Lake near its eastern end and flows approximately 27 km before entering Stuart Lake.

Stuart Lake (54°38' N, 124°49' W) is the most southerly of the Stuart system lakes. It is the largest (surface area=359 km²) and shallowest (mean depth=20 m) of the three lakes. It lies at an elevation of 680 m, has a drainage basin area of 14,245 km², and is situated in a northwest-to-southeast direction. The lakes' large basin is relatively shallow, with a maximum depth of 40 m. At the lake's upper end is a smaller (surface area=39 km²), fjord-like basin with a maximum depth of 90 m. The Stuart River discharges from the southeast end of the lake at the community of Fort St. James. It flows for approximately 90 km before entering the Nechako River.

METHODS

From 1996 to 1998, we collected limnological data from two locations in Trembleur Lake and from four locations each in Takla and Stuart lakes. Data were collected monthly from May to October (n=6 at each station) except in 1997, when Stuart and Trembleur lakes were sampled from May to September (n=5).

Temperature and conductivity profiles from the surface to 100 m or the lake bottom (whichever was less) were obtained at each station with an Applied Microsystems conductivity, temperature, and depth meter (Model STD-12). Seasonal temperature isolines were plotted by the SAS procedure Gcontour (SAS Institute Inc., 1990) from a grid of interpolated and smoothed unscaled data. This was computed by the SAS procedure G3grid using a bivariate method described by Akima (1978). Li-Cor data loggers (model LI-1000) equipped with quantum sensors (model LI-192S) were used to measure photosynthetically active radiation (400-700 nm) from the surface to the compensation depth (1% of surface intensity), and to calculate vertical light extinction coefficients. We assumed that euphotic zone depth (EZD) was equal to the compensation depth. A standard 22-cm white Secchi disk was used to measure water transparency.

We used an opaque Van Dorn bottle sterilized with 95% ethanol to collect all water samples. Sampling took place between 0800 and 1100 h. At each station, water from 4-6 depths within the euphotic zone was collected, and equal volumes were mixed in 9-L Nalge Lowboy carboys to provide an integrated sample. From the integrated samples, we carried out replicate analyses of dissolved silicate, total dissolved solids, particulate carbon, particulate nitrogen, nitrate, total phosphorus, total dissolved phosphorus, particulate phosphorus, chlorophyll, phytoplankton, picoplankton, and bacteria. At each station we also collected a hypolimnetic sample from a depth of 30 m, which was analyzed for chlorophyll, nitrate, and total phosphorus.

Chemical analyses were carried out according to those methods given in Stephens and Brandstaetter (1983) and Stainton et al. (1977). For total phosphorus and dissolved phosphorus determination, clean glass tubes were rinsed with sample, filled, capped with Teflon-lined screw caps, and stored at 4°C. These were later analyzed using a molybdenum blue method with stannous chloride reduction after persulfate digestion. Water samples for the remaining nutrient analyses and chlorophyll determinations were kept cool and dark, and were filtered within 2–4 h. Water for dissolved nutrient analyses was filtered through an ashed 47-mm diameter Micro Filtration Systems (MFS) borosilicate microfiber filter (equivalent to a Whatman GF/F filter). Each filter was placed in a 47-mm Swinnex filtering unit (Millipore Corp.), rinsed with distilled, deionized water (DDW), and then rinsed with approximately 50 mL of sample. An acid-washed, DDW-rinsed borosilicate glass bottle was rinsed and filled with 100 mL of filtered water, capped, stored at 4°C in the dark, and later analyzed for nitrate (Stainton et al. 1977). An additional 100 mL of sample was filtered into a clean, rinsed polyethylene bottle, stored at 4°C in the dark, and later analyzed for silicate and total dissolved solids. For determination of particulate phosphorus concentration, we filtered 1 L of water through an ashed 47-mm diameter MFS filter, placed the filter in a clean scintillation vial, and later analyzed it using the method of Stainton et al. (1977). For determination of particulate carbon and particulate nitrogen concentrations, we filtered 200 mL of water through an ashed 25-mm diameter MFS filter, folded the filter in half, place it in aluminium foil dishes and froze it. Later, PC and PN concentrations were determined on a Perkin Elmer Model 240XA Elemental Analyzer. For chlorophyll analysis we filtered 250 mL of water through a 47-mm diameter, 0.45-µm Millipore HA filter. From integrated samples at station 4 for Stuart and Takla lakes and at station 1 for Trembleur Lake (in 1996 and 1997 only), we also determined chlorophyll concentration of pico- and microplankton by filtering 250 mL of water through 2-µm Nuclepore and 20-µm Nitex filters. Filters were folded in half, placed in aluminium foil dishes, and frozen. They were later analyzed using a Turner fluorometer (Model 112) after maceration in 90% acetone.

Water for alkalinity determinations was placed in glass bottles that were filled completely (one bottle from each sampling depth) and sealed. Within 4 hours of collection, a Cole-Parmer Digi-Sense pH meter (Model 5986-10) and Ross combination electrode were used to determine the pH and total alkalinity (mg $CaCO_3$/L) of these samples according to the standard potentiometric method of APHA (1985). Dissolved inorganic carbon (DIC) concentrations were calculated indirectly from pH, temperature, total dissolved solids, and bicarbonate alkalinity.

Water for bacterioplankton enumeration was collected in sterile scintillation vials and preserved with two drops of formaldehyde. Bacterioplankton were later counted with a Zeiss epifluorescent microscope using the DAPI method described by Robarts and Sephton (1981). Eight random fields were counted on each filter and the counts converted to numbers/mL.

For nano- and microphytoplankton enumeration and identification opaque 125-mL polyethylene bottles were rinsed with sample, filled, and fixed with 2 mL of

Lugol's iodine solution. Each sample was gently mixed and a subsample was settled overnight in a settling chamber of 7-, 12-, or 27-mL capacity. Transects at 187.5X and 750X magnification were counted using a Wild M40 inverted microscope equipped with phase contrast optics. Cells were identified as to genus or species, and assigned to size classes.

Phototrophic picoplankton (cyanobacteria and eukaryotic algae <2 µm in diameter) were enumerated using the method described by MacIsaac and Stockner (1985). Within several hours of sample collection, 15 mL of sample water was filtered through a 0.2-µm Nuclepore filter counter-stained with Irgalan black. Filters were placed in opaque petri dishes, air-dried, and stored in the dark at room temperature until analyzed. During analysis, each filter was placed on a wet 40-µm mesh nylon screen in a filter holder, 1–2 mL of filtered DDW were added to the filter column, and the cells on the filter were rehydrated for 3–5 min. Water was drawn through at a vacuum pressure of 20-cm Hg, and the moist filter was placed on a glass slide with a drop of immersion oil (Cargille Type B) and a coverslip. The Zeiss epifluorescence microscope used for picoplankton enumeration was equipped with a 397-nm longwave-pass exciter filter and a 560-nm shortwave-pass exciter filter, a 580-nm beam-splitter mirror and a 590-nm longwave-pass barrier filter. Filters were examined at 1250X magnification under oil immersion, and 20 random fields were counted.

We measured *in situ* photosynthetic rates (PR) at every sampling station and date. In addition, at station 4 on Takla and Stuart lakes and at station 1 on Trembleur Lake we measured PR in two additional size fractions using 2- and 20-µm filters. We measured PR at 7 depths from the surface to below the compensation depth. At each depth, two light and one dark 125-mL glass bottles were filled, inoculated with approximately 137 kBq of a ^{14}C-bicarbonate stock solution, and incubated at the original sampling depth. Incubations lasted 1.5 to 2 hours and were started between 0900 and 1100 h (PST). To determine activity of the stock solution, we inoculated three scintillation vials containing 0.5 mL of Scintigest (Fisher Scientific) with the stock solution. After incubation, bottles were placed in light-proof boxes and transported to the field laboratory where filtration started <2 hours after incubation stopped. For total PR, we filtered the entire contents of each bottle through a 25-mm diameter MFS glass fibre filter (equivalent to a Whatman GF/F) at a vacuum not exceeding 20-cm Hg. For fractionated PR, we filtered 40-mL aliquots from each bottle through MFS glass fibre, 2.0-µm Nuclepore, and 20-µm Nitex filters. Filters were placed in scintillation vials containing 0.5 mL of 0.5 N HCl and lids were left off the vials for 6–8 hours. All vials were stored cool and in the dark. Within a few days of the incubations, 10 mL of Scintiverse II (Fisher Scientific) was added to each scintillation vial and sample activity was determined in a Packard Tri-Carb 4530 liquid scintillation counter. Quench series composed of the same scintillation cocktail and filters used for samples were used to determine counting efficiency, and Strickland's (1960) equation was used to calculate hourly PR. PR was converted from hourly to daily rates using light data collected with a Li-Cor Model LI-1000 data logger and Li-Cor 190SA quantum sensors.

Replicate zooplankton samples were collected at every station with a 160-µm mesh Wisconsin net (mouth area = 0.05 m^2) hauled vertically from 30 m to the surface. All samples were placed in 125-mL plastic bottles and preserved in a sucrose-buffered 4% formalin solution (Haney and Hall 1973). Macrozooplankton (>250 µm) were counted, identified to family or species using Balcer et al. (1984) and Pennak (1978), and measured with a computerized video measuring system (MacLellan et al. 1993). Measurement of body length was carried out as described by Koenings et al. (1987). Macrozooplankton biomass was calculated with species-specific length-weight regressions adapted from Bird and Prairie (1985), Culver et al. (1985), Stemberger and Gilbert (1987), and Yan and Mackie (1987).

Seasonal averages of data collected at each station (with the exception of PR) were calculated as time-weighted means from the first sampling date in May to the final date in October. Total seasonal PR at each station was calculated by integrating daily PR over time, with the growing season defined as May 1 to October 31 (we assumed that PR was 0 on the first and last days of the growing season). Seasonal average daily PR (PR_{mean}) was calculated by dividing total seasonal PR for each station by the length of the growing season (180 days). Whole-lake averages and total seasonal PR (PR_{total}) were obtained by weighting each station based on the area of the lake it represented. We calculated total annual PR in tonnes C/lake (PR_{total}) by multiplying whole-lake average PR by lake area.

We calculated the area of the lake and its various basins by digitizing lake shorelines from 1:50,000 topographic maps using Sigmascan v1.2 image analysis software. Lake volume was determined by digitizing depth contours on a bathymetric map of the lake.

RESULTS

Geographic and morphometric data are presented in Table 1. Monthly physical data by station are reported in Table 2. Variations in monthly epilimnetic chemical and biological data by station are reported in Tables 3-6. Tables 7 and 8 report monthly zooplankton density and biomass data. Time-weighted epilimnetic seasonal averages by station are reported in Tables 9-15 and whole-lake seasonal averages by year and lake are presented in Tables 16-22. Graphical depictions of the seasonal variation in some of the more notable variables are also given (Fig. 2-27).

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Table 1. Geographic and morphometric data from Takla, Trembleur, and Stuart lakes.

Lake	Station	Latitude (°N)	Longitude (°W)	Elevation (m)	Surface area (km^2)	Mean depth (m)	Water residence time (yr)	Drainage basin area (km^2)	Depth at station (m)
Takla		55°15'	125°44'	689	246	107	14.9 (estimate)	6216	
	1	55°33'12"	126°04'36"						207
	2	55°20'12"	125°47'06"						229
	3	55°12'54"	125°57'18"						159
	4	55°06'36"	125°38'30"						36
Trembleur		54°50'	125°05'	686	116	40	1.9 (estimate)	8547	
	1	54°47'00"	125°20'00"						85
	2	54°51'00"	125°05'00						50
Stuart		54°38'	124°49'	680	359	20	1.8	14245	
	1	54°37'24"	125°03'46"						71
	2	54°38'54"	124°49'12"						28
	3	54°33'24"	124°37'48"						31
	4	54°28'36"	124°26'24"						32

Table 2. Variation in physical data for each station in Takla, Trembleur, and Stuart lakes.

Lake and year	Station	Date	Surface temp. (°C)	Mean epilimnetic temp. (°C)	Epilimnion depth (m)	Secchi depth (m)	Euphotic zone depth (m)	Extinction coefficient (/m)
Takla								
1996	1	26-May	3.5	4.6	Isothermal	5.5	7.8	0.53
		23-Jun	8.4	7.4	4.2	2.9	4.5	0.85
		16-Jul	11.6	11.2	10.0	3.0	5.8	0.69
		17-Aug	13.5	13.1	18.0	4.3	7.1	0.54
		10-Sep	12.4	12.3	12.0	6.5	7.1	0.55
		12-Oct	9.4	9.4	30.0	7.0	9.6	0.39
	2	23-Jun	7.5	6.3	4.4	4.0	8.2	0.46
		16-Jul	12.6	12.1	14.8	3.9	6.3	0.66
		17-Aug	13.2	12.6	3.8	4.9	6.9	0.54
		10-Sep	11.8	11.7	13.1	6.5	6.9	0.62
		12-Oct	9.0	8.9	23.6	5.5	9.3	0.40
	3	25-May	3.6	3.5	isothermal	.	9.0	0.47
		24-Jun	9.7	8.8	4.0	5.1	6.5	0.62
		17-Jul	9.6	9.5	10.0	5.0	7.6	0.52
		18-Aug	12.3	11.5	11.6	6.7	7.9	0.51
		11-Sep	11.4	11.4	18.6	5.0	6.8	0.55
		13-Oct	8.4	8.4	29.5	7.5	10.5	0.40
	4	25-May	4.1	4.0	isothermal	5.5	8.9	0.45
		24-Jun	10.3	8.6	3.0	5.1	7.0	0.58
		17-Jul	12.2	12.0	13.9	5.1	7.0	0.54
		18-Aug	14.2	14.0	13.9	4.5	7.4	0.53
		11-Sep	11.7	11.4	13.8	5.0	6.6	0.61
		13-Oct	8.1	8.1	19.2	5.0	8.7	0.42
Takla								
1997	1	26-May	4.0	3.9	isothermal	6.7	6.7	0.59
		17-Jun	9.1	8.6	8.1	1.6	4.3	0.93
		19-Jul	15.6	13.6	5.0	3.0	6.1	0.71
		17-Aug	15.9	13.8	2.5	4.0	5.7	0.61
		10-Sep	15.2	14.6	13.5	5.0	6.4	0.69
		7-Oct	10.5	10.5	21.0	4.5	7.1	0.55

Table 2 (Cont.). Variation in physical data for each station in Takla, Trembleur, and Stuart lakes.

Lake and year	Station	Date	Surface temp. (°C)	Mean epilimnetic temp. (°C)	Epilimnion depth (m)	Secchi depth (m)	Euphotic zone depth (m)	Extinction coefficient (/m)
	2	26-May	3.9	3.9	Isothermal	7.1	8.2	0.58
		17-Jun	10.0	9.3	5.9	3.0	6.4	0.65
		19-Jul	15.9	.	.	4.0	6.6	0.60
		17-Aug	17.4	16.4	6.0	4.5	6.7	0.60
		10-Sep	15.0	.	11.0	4.5	5.9	0.78
		7-Oct	9.8	9.8	22.0	4.5	7.5	0.55
	3	27-May	3.9	3.9	Isothermal	4.5	8.3	0.46
		18-Jun	9.2	8.4	2.0	3.6	6.1	0.64
		20-Jul	14.3	.	.	3.5	6.5	0.66
		18-Aug	17.0	16.5	14.9	4.0	6.7	0.58
		9-Sep	14.6	14.2	11.6	6.0	5.8	0.64
		8-Oct	8.9	8.7	4.7	4.5	7.3	0.54
	4	27-May	4.2	4.1	Isothermal	2.8	6.1	0.67
		18-Jun	10.4	9.4	8.2	3.2	6.5	0.63
		20-Jul	14.9	14.3	10.0	4.0	6.7	0.67
		18-Aug	17.2	17.0	10.2	4.5	6.5	0.61
		9-Sep	15.1	14.6	8.9	6.0	5.5	0.81
		8-Oct	6.4	6.1	Isothermal	4.0	7.7	0.51
Takla								
1998	1	24-May	9.2	7.7	2.1	4.0	6.2	0.66
		17-Jun	11.3	10.5	12.0	4.1	6.3	0.65
		20-Jul	15.3	15.0	6.9	4.5	6.8	0.57
		12-Aug	16.2	16.0	9.0	4.6	7.8	0.49
		19-Sep	12.9	12.9	13.1	6.0	6.3	0.57
		7-Oct	10.1	10.2	17.7	4.8	7.4	0.53
	2	24-May	8.9	6.0	2.0	4.7	7.4	0.52
		17-Jun	14.2	11.7	4.2	4.8	7.1	0.56
		20-Jul	16.5	15.1	7.0	4.5	6.9	0.57
		12-Aug	14.9	14.7	9.0	4.6	8.1	0.48
		19-Sep	12.4	12.4	17.9	5.8	6.8	0.56
		7-Oct	10.1	9.7	10.9	6.3	8.6	0.44

Table 2 (Cont.). Variation in physical data for each station in Takla, Trembleur, and Stuart lakes.

Lake and year	Station	Date	Surface temp. (°C)	Mean epilimnetic temp. (°C)	Epilimnion depth (m)	Secchi depth (m)	Euphotic zone depth (m)	Extinction coefficient (/m)
	3	25-May	4.5	4.3	Isothermal	6.1	8.1	0.51
		18-Jun	12.7	10.2	1.6	4.1	7.6	0.53
		21-Jul	14.7	13.5	9.8	5.0	7.5	0.52
		13-Aug	15.4	14.8	7.8	6.0	8.0	0.49
		18-Sep	12.0	11.8	13.1	5.9	6.2	0.65
		8-Oct	10.0	10.0	15.2	5.1	7.8	0.51
	4	25-May	9.3	8.2	7.1	3.8	6.6	0.58
		18-Jun	12.4	11.3	4.6	4.8	7.6	0.51
		21-Jul	15.9	15.4	11.2	5.0	7.6	0.51
		13-Aug	16.8	16.1	8.9	6.5	7.2	0.55
		18-Sep	11.9	11.9	19.1	5.5	6.6	0.58
		8-Oct	9.8	9.7	18.5	4.4	8.1	0.47
Trembleur								
1996	1	23-May	3.8	3.6	Isothermal	4.5	.	.
		19-Jun	8.7	8.0	5.8	2.5	5.8	0.74
		22-Jul	10.7	10.6	20.4	3.3	5.8	0.73
		13-Aug	14.5	14.0	11.3	4.5	6.1	0.69
		13-Sep	13.1	12.9	28.0	4.5	6.6	0.58
		8-Oct	10.7	10.7	21.4	5.5	7.5	0.53
	2	23-May	5.1	5.0	isothermal	3.0	5.0	0.78
		19-Jun	8.6	8.6	19.7	2.5	5.8	0.66
		22-Jul	12.2	12.2	17.3	4.8	5.4	0.78
		13-Aug	14.5	14.5	18.5	4.9	6.6	0.61
		13-Sep	13.1	12.9	25.6	5.5	6.3	0.65
		8-Oct	10.7	10.7	34.8	5.5	7.6	0.49
Trembleur								
1997	1	24-May	6.4	4.9	2.2	4.0	5.5	0.75
		22-Jun	9.9	9.5	33.5	.	5.3	0.75

Table 2 (Cont.). Variation in physical data for each station in Takla, Trembleur, and Stuart lakes.

Lake and year	Station	Date	Surface temp. (°C)	Mean epilimnetic temp. (°C)	Epilimnion depth (m)	Secchi depth (m)	Euphotic zone depth (m)	Extinction coefficient (/m)
		15-Jul	12.8	12.4	10.0	3.5	5.6	0.69
		12-Aug	16.9	16.3	15.8	3.5	5.7	0.68
		14-Sep	14.2	14.1	isothermal	3.5	5.9	0.70
	2	24-May	7.4	6.6	isothermal	1.5	4.0	1.04
		22-Jun	10.8	10.4	14.6	2.5	4.9	0.80
		15-Jul	15.1	14.8	20.0	3.5	4.9	0.77
		12-Aug	16.9	16.7	12.8	3.5	5.0	0.76
Trembleur								
1998	1	21-May	12.1	8.6	1.6	2.5	4.7	0.76
		16-Jun	14.4	13.0	15.7	3.0	5.5	0.73
		17-Jul	15.4	15.3	20.2	4.5	6.9	0.55
		11-Aug	15.9	15.8	12.4	4.0	7.4	0.54
		15-Sep	14.0	13.6	16.0	5.1	6.4	0.66
		6-Oct	12.0	12.0	26.4	4.2	7.4	0.55
	2	21-May	11.5	9.9	0.8	2.5	4.6	0.81
		16-Jun	12.2	10.3	2.6	3.7	5.5	0.69
		11-Aug	17.3	17.3	12.2	4.8	7.6	0.50
		15-Sep	13.8	13.8	23.7	4.3	7.5	0.51
		6-Oct	10.1	11.6	14.0	3.9	7.6	0.53
Stuart								
1996	1	24-May	6.6	6.0	isothermal	4.8	8.3	0.47
		20-Jun	10.8	10.3	13.2	3.0	6.4	0.62
		19-Jul	12.8	12.6	6.0	4.0	7.1	0.54
		14-Aug	14.2	13.9	10.0	5.5	6.6	0.60
		14-Sep	13.2	13.0	17.8	5.0	7.9	0.45
		9-Oct	10.6	10.6	21.7	4.0	8.8	0.48
	2	24-May	9.0	8.1	10.1	2.5	5.5	0.72
		20-Jun	11.3	10.6	17.1	2.5	5.9	0.71
		19-Jul	13.0	13.0	11.5	4.3	7.1	0.56

Table 2 (Cont.). Variation in physical data for each station in Takla, Trembleur, and Stuart lakes.

Lake and year	Station	Date	Surface temp. (°C)	Mean epilimnetic temp. (°C)	Epilimnion depth (m)	Secchi depth (m)	Euphotic zone depth (m)	Extinction coefficient (/m)
		14-Aug	15.6	15.2	14.0	4.8	6.8	0.57
		14-Sep	13.8	13.7	19.8	4.5	7.0	0.53
		9-Oct	10.9	10.9	isothermal	6.0	8.6	0.44
	3	21-Jun	11.4	11.2	7.6	4.1	6.0	0.64
		21-Jul	12.5	12.4	7.6	3.6	6.8	0.59
		15-Aug	16.2	15.7	20.0	5.5	7.4	0.55
		15-Sep	13.7	13.8	27.8	5.6	7.4	0.52
		10-Oct	11.1	11.1	isothermal	5.0	9.0	0.40
	4	27-May	5.4	5.3	isothermal	4.8	7.8	0.54
		21-Jun	11.3	11.2	12.6	3.5	6.7	0.56
		21-Jul	13.7	13.7	18.8	4.4	6.3	0.63
		15-Aug	16.2	15.7	22.0	4.4	7.6	0.53
		15-Sep	13.7	13.7	21.1	5.0	7.4	0.50
		10-Oct	11.2	11.2	28.1	5.5	10.1	0.37
Stuart 1997	1	22-May	6.3	5.6	isothermal	3.5	6.9	0.62
		21-Jun	11.6	11.4	8.6	3.5	5.9	0.68
		16-Jul	14.1	13.7	10.0	3.5	5.6	0.70
		13-Aug	16.1	15.6	9.5	3.5	6.3	0.65
		12-Sep	14.8	14.7	10.8	4.5	6.0	0.73
	2	22-May	6.7	6.4	isothermal	1.5	3.6	1.13
		21-Jun	12.3	12.0	12.4	3.0	5.4	0.83
		16-Jul	14.3	13.9	15.0	3.5	6.3	0.68
		13-Aug	17.3	17.1	13.9	3.1	6.4	0.61
		12-Sep	15.9	15.7	15.6	5.0	5.6	0.86
	3	23-May	6.3	6.1	isothermal	2.0	4.5	0.90
		20-Jun	11.8	11.6	12.4	3.1	5.7	0.80
		17-Jul	14.8	14.6	15.0	3.0	5.1	0.83
		15-Aug	16.5	16.4	19.8	3.5	5.4	0.65
		13-Sep	16.0	16.0	14.5	4.5	5.2	0.90

Table 2 (Cont.). Variation in physical data for each station in Takla, Trembleur, and Stuart lakes.

Lake and year	Station	Date	Surface temp. (°C)	Mean epilimnetic temp. (°C)	Epilimnion depth (m)	Secchi depth (m)	Euphotic zone depth (m)	Extinction coefficient (/m)
	4	23-May	6.5	6.1	isothermal	3.2	6.0	0.68
		20-Jun	12.7	12.7	23.4	3.6	6.4	0.69
		17-Jul	16.8	16.3	15.2	4.0	5.5	0.72
		15-Aug	17.8	17.8	14.1	4.0	5.3	0.64
		13-Sep	15.9	.	18.0	4.5	5.3	0.94
Stuart								
1998	1	22-May	11.1	8.2	3.6	3.0	5.9	0.64
		20-Jun	14.7	12.6	6.2	3.8	6.3	0.59
		18-Jul	14.3	13.7	18.9	4.5	6.0	0.57
		15-Aug	16.5	15.6	6.2	5.0	6.2	0.60
		16-Sep	13.1	13.0	13.9	4.9	7.1	0.54
		10-Oct	10.9	10.9	19.6	5.0	7.7	0.51
	2	22-May	13.4	11.4	5.0	2.5	5.1	0.74
		20-Jun	15.9	14.2	5.0	4.5	5.7	0.70
		18-Jul	16.9	15.7	6.0	5.0	6.9	0.60
		15-Aug	17.9	17.4	9.6	5.3	6.8	0.60
		16-Sep	13.9	13.9	16.3	4.6	6.5	0.58
		10-Oct	11.0	11.0	isothermal	4.8	7.3	0.50
	3	23-May	13.4	10.4	2.6	3.1	5.7	0.71
		19-Jun	14.3	13.6	7.3	4.0	7.6	0.51
		19-Jul	16.9	16.7	10.3	4.8	7.0	0.53
		16-Aug	17.6	17.6	10.4	4.0	7.9	0.45
		17-Sep	14.4	14.3	19.5	5.2	7.7	0.46
		11-Oct	10.9	10.9	27.3	4.6	6.1	0.59
	4	23-May	11.7	10.8	6.2	3.2	6.5	0.64
		19-Jun	14.8	14.8	17.8	4.4	6.6	0.59
		19-Jul	17.1	17.1	16.0	5.0	7.3	0.46
		16-Aug	17.9	17.9	15.8	4.0	7.9	0.48
		17-Sep	14.5	14.5	19.0	4.6	7.7	0.49
		11-Oct	10.8	10.8	21.4	4.1	8.2	0.46

Table 3. Variation in mean epilimnetic chemical data for each station in Takla, Trembleur, and Stuart lakes.

Lake and year	Station	Date	Conductivity (µS/cm @ 25°C)	pH	Total dissolved solids (mg/L)	Total alkalinity (mg $CaCO_3$/L)	Dissolved inorganic carbon (µg/L)	Silica (mg Si/L)	Nitrate (µg N/L)	Phosphorus (µg/L)	
										Total	Dissolved
Takla											
1996	1	26-May	53	7.36	53	30.16	8027	2.23	73.4	3.1	.
		23-Jun	49	7.30	53	27.98	7533	2.29	69.5	5.3	.
		16-Jul	51	7.52	53	27.55	7120	2.25	34.7	4.1	.
		17-Aug	51	7.54	49	27.79	7160	2.37	40.6	3.8	.
		10-Sep	53	7.41	49	27.51	7266	2.27	53.7	4.4	.
		12-Oct	58	7.48	55	28.22	7395	2.10	59.1	3.9	.
	2	23-Jun	52	7.32	57	30.13	7736	2.30	75.8	3.1	.
		16-Jul	52	7.49	48	27.85	7253	2.22	46.8	4.6	.
		17-Aug	52	7.47	51	27.75	7224	2.38	37.7	4.1	.
		10-Sep	53	7.51	55	27.07	6997	2.23	39.8	4.1	.
		12-Oct	58	7.42	52	26.91	7156	2.32	49.4	5.2	.
	3	25-May	52	7.38	53	32.32	8544	2.29	69.8	3.6	.
		24-Jun	53	7.45	55	29.91	7782	2.34	66.1	4.3	.
		17-Jul	54	7.43	55	30.17	7971	2.28	65.2	3.9	.
		18-Aug	54	7.46	52	29.97	7848	2.47	50.2	3.5	.
		11-Sep	54	7.42	56	27.73	7279	2.29	44.4	4.3	.
		13-Oct	60	7.48	53	30.15	7875	2.35	61.8	5.8	.
	4	25-May	52	7.32	52	30.30	8115	2.26	58.9	3.2	.
		24-Jun	53	7.49	57	29.78	7681	2.36	56.5	5.0	.
		17-Jul	54	7.55	53	30.64	7911	2.29	44.6	4.7	.
		18-Aug	55	7.57	61	29.38	7527	2.46	40.3	4.0	.
		11-Sep	54	7.41	51	27.73	7287	2.25	37.4	3.6	.
		13-Oct	59	7.47	60	28.96	7604	2.36	50.3	6.1	.

Table 3 (Cont.). Variation in mean epilimnetic chemical data for each station in Takla, Trembleur, and Stuart lakes.

Lake and year	Station	Date	Conductivity (µS/cm @ 25°C)	pH	Total dissolved solids (mg/L)	Total alkalinity (mg $CaCO_3$/L)	Dissolved inorganic carbon (µg/L)	Silica (mg Si/L)	Nitrate (µg N/L)	Phosphorus (µg/L)	
										Total	Dissolved
Takla											
1997	1	26-May	56	7.24	55	26.29	8079	2.19	75.3	.	.
		17-Jun	55	7.39	51	23.09	6833	2.24	61.7	.	.
		19-Jul	.	7.50	52	24.00	6936	2.05	24.3	.	.
		17-Aug	58	7.22	48	24.71	7723	2.13	32.0	.	.
		10-Sep	60	7.53	48	25.69	7405	2.12	32.6	.	.
		7-Oct	.	7.34	49	24.96	7535	1.98	43.2	.	.
	2	26-May	56	7.26	53	26.31	8088	2.20	76.0	.	.
		17-Jun	58	7.45	53	25.09	7341	2.26	66.3	.	.
		19-Jul	.	7.47	44	24.76	7184	1.97	32.5	.	.
		17-Aug	60	7.65	48	25.17	7174	2.02	25.0	.	.
		10-Sep	.	7.63	48	25.71	7353	2.16	31.9	.	.
		7-Oct	.	7.35	52	25.07	7555	2.11	47.1	.	.
	3	27-May	57	7.27	57	27.16	8259	0.51	86.8	.	.
		18-Jun	59	7.53	48	27.24	7883	1.31	68.8	.	.
		20-Jul	.	7.52	52	26.60	7700	1.99	47.2	.	.
		18-Aug	63	7.64	51	26.37	7525	1.22	36.1	.	.
		9-Sep	63	7.62	59	26.66	7630	2.09	44.0	.	.
		8-Oct	61	7.29	55	25.70	7819	1.92	57.0	.	.
	4	27-May	57	7.23	57	26.83	8226	2.41	73.6	.	.
		18-Jun	60	7.54	52	26.74	7716	1.96	67.2	.	.
		20-Jul	.	7.59	51	26.40	7557	0.69	40.3	.	.
		18-Aug	63	7.67	49	25.84	7367	2.19	33.5	.	.
		9-Sep	62	7.52	49	26.37	7638	2.23	37.2	.	.
		8-Oct	59	7.31	55	25.47	7727	2.26	75.5	.	.
Takla											
1998	1	24-May	62	7.51	52	29.10	7513	2.23	71.9	7.3	5.0
		17-Jun	62	7.48	52	27.91	7212	2.15	48.4	9.6	6.7

Table 3 (Cont.). Variation in mean epilimnetic chemical data for each station in Takla, Trembleur, and Stuart lakes.

Lake and year	Station	Date	Conductivity (µS/cm @ 25°C)	pH	Total dissolved solids (mg/L)	Total alkalinity (mg $CaCO_3$/L)	Dissolved inorganic carbon (µg/L)	Silica (mg Si/L)	Nitrate (µg N/L)	Phosphorus (µg/L)	
										Total	Dissolved
		20-Jul	66	7.63	49	29.48	7148	2.09	42.6	7.3	4.9
		12-Aug	66	7.69	47	29.23	7362	2.10	28.8	3.4	3.4
		19-Sep	67	7.67	53	29.79	7529	2.00	39.6	3.7	3.4
		7-Oct	66	7.61	52	29.69	7543	2.07	46.8	4.2	4.2
	2	24-May	61	7.55	52	29.44	7527	2.27	71.5	5.6	4.8
		17-Jun	65	7.55	55	28.95	7400	2.19	46.7	6.4	6.9
		20-Jul	67	7.60	48	28.83	7326	2.11	43.7	7.4	4.7
		12-Aug	67	7.64	48	29.75	7525	2.13	37.3	3.7	3.0
		19-Sep	67	7.67	55	29.90	7556	2.09	42.5	3.5	3.4
		7-Oct	66	7.56	53	29.62	7585	2.10	48.8	4.2	3.5
	3	25-May	61	7.43	56	30.30	7880	2.34	85.4	5.0	4.6
		18-Jun	65	7.51	55	30.19	7756	2.29	53.8	11.7	8.7
		21-Jul	69	7.59	51	30.10	7665	2.24	61.4	7.1	4.8
		13-Aug	69	7.75	49	31.08	7797	2.25	40.8	4.4	3.1
		18-Sep	68	7.65	51	30.33	7699	2.26	50.6	3.8	3.9
		8-Oct	67	7.63	55	30.60	7758	2.22	47.7	4.1	3.7
	4	25-May	63	7.59	53	30.50	7756	2.28	57.3	6.0	5.1
		18-Jun	67	7.51	59	30.12	7757	2.30	49.7	6.6	8.7
		21-Jul	69	7.66	49	29.11	7348	2.19	44.3	6.8	4.6
		13-Aug	70	7.77	37	31.11	7653	2.21	36.6	3.9	2.9
		18-Sep	67	7.61	51	29.90	7616	2.21	48.5	4.1	3.2
		8-Oct	67	7.54	55	30.19	7743	2.14	46.0	4.4	4.0
Trembleur											
1996	1	23-May	57	7.47	60	38.22	9960	2.46	46.9	6.3	.
		19-Jun	60	7.49	65	36.22	9321	2.61	30.8	9.8	.
		22-Jul	61	7.58	67	36.91	9375	2.41	31.5	6.1	.
		13-Aug	63	7.64	61	36.35	9181	2.42	36.1	6.7	.

Table 3 (Cont.). Variation in mean epilimnetic chemical data for each station in Takla, Trembleur, and Stuart lakes.

Lake and year	Station	Date	Conductivity (µS/cm @ 25°C)	pH	Total dissolved solids (mg/L)	Total alkalinity (mg $CaCO_3$/L)	Dissolved inorganic carbon (µg/L)	Silica (mg Si/L)	Nitrate (µg N/L)	Phosphorus (µg/L) Total	Phosphorus (µg/L) Dissolved
		13-Sep	63	7.62	57	35.32	8949	2.41	43.5	11.1	.
		8-Oct	69	7.36	60	36.61	9744	2.36	50.2	8.0	.
	2	23-May	58	7.43	63	39.26	10297	2.44	36.7	6.8	.
		19-Jun	59	7.51	65	37.60	9663	2.42	36.5	7.3	.
		22-Jul	61	7.63	57	35.46	8986	2.34	23.7	7.6	.
		13-Aug	61	7.73	60	34.25	8574	2.34	29.9	10.1	.
		13-Sep	61	7.69	61	35.58	8946	2.33	32.3	6.8	.
		8-Oct	68	7.37	56	36.33	9643	2.25	32.7	6.0	.
Trembleur											
1997	1	24-May	65	7.16	55	33.76	10518	2.42	68.6	.	.
		22-Jun	68	7.64	60	32.01	9110	2.43	46.7	.	.
		15-Jul	.	7.70	63	31.66	8979	1.51	36.3	.	.
		12-Aug	72	7.36	63	27.91	8286	2.24	35.1	.	.
		14-Sep	72	7.64	68	32.04	9183	2.31	23.0	.	.
	2	24-May	67	7.33	67	33.80	10129	2.42	54.0	.	.
		22-Jun	68	7.64	60	31.33	8926	2.38	41.1	.	.
		15-Jul	.	7.69	59	30.51	8647	1.37	31.7	.	.
		12-Aug	70	7.76	61	29.44	8286	2.16	29.1	.	.
Trembleur											
1998	1	21-May	64	7.48	69	35.87	9222	2.54	44.5	9.8	8.6
		16-Jun	76	7.56	67	36.90	9413	2.31	43.3	12.3	10.5
		17-Jul	80	7.74	57	36.16	9028	2.31	32.6	8.3	6.5
		11-Aug	79	7.84	55	36.67	9113	2.27	30.2	7.6	3.9
		15-Sep	77	7.74	60	36.45	9117	2.28	29.9	5.0	4.9
		6-Oct	77	7.61	61	36.06	9164	2.14	28.6	6.4	5.4

Table 3 (Cont.). Variation in mean epilimnetic chemical data for each station in Takla, Trembleur, and Stuart lakes.

Lake and year	Station	Date	Conductivity (µS/cm @ 25°C)	pH	Total dissolved solids (mg/L)	Total alkalinity (mg $CaCO_3$/L)	Dissolved inorganic carbon (µg/L)	Silica (mg Si/L)	Nitrate (µg N/L)	Phosphorus (µg/L)	
										Total	Dissolved
	2	21-May	67	7.46	57	36.26	9397	2.47	41.4	10.1	7.3
		16-Jun	74	7.61	63	36.38	9235	2.29	30.3	12.1	8.0
		11-Aug	79	7.85	56	36.24	9003	2.23	19.6	6.8	4.1
		15-Sep	76	7.83	56	35.56	8962	2.22	18.0	5.2	4.4
		6-Oct	77	7.68	61	35.38	8917	2.29	16.6	5.9	5.0
Stuart											
1996	1	24-May	68	7.55	67	46.42	11897	2.26	28.0	6.9	.
		20-Jun	74	7.50	68	46.06	11884	2.22	5.1	6.3	.
		19-Jul	76	7.76	69	45.97	11489	2.13	9.3	7.0	.
		14-Aug	77	7.76	68	45.86	11419	2.11	8.1	6.6	.
		14-Sep	76	7.70	65	43.81	11013	2.19	9.4	8.1	.
		9-Oct	84	7.82	68	45.62	11346	2.14	23.3	7.7	.
	2	24-May	67	7.74	65	44.08	11051	2.38	5.1	11.5	.
		20-Jun	69	7.44	65	42.00	10979	2.39	14.8	6.8	.
		19-Jul	73	7.77	67	43.62	10887	2.38	23.9	6.9	.
		14-Aug	74	7.77	61	43.00	10721	2.25	15.9	6.5	.
		14-Sep	70	7.65	60	42.08	10645	2.28	15.9	8.7	.
		9-Oct	78	7.75	61	42.40	10613	2.16	24.3	8.0	.
	3	21-Jun	71	7.60	69	43.54	11064	2.23	20.3	6.2	.
		21-Jul	73	7.68	65	43.76	11015	2.22	24.1	6.1	.
		15-Aug	74	7.81	65	42.45	10546	2.17	14.9	7.7	.
		15-Sep	72	7.57	65	41.18	10612	2.30	25.5	7.4	.
		10-Oct	79	7.67	69	43.67	11014	2.09	19.5	7.8	.

Table 3 (Cont.). Variation in mean epilimnetic chemical data for each station in Takla, Trembleur, and Stuart lakes.

Lake and year	Station	Date	Conductivity (µS/cm @ 25°C)	pH	Total dissolved solids (mg/L)	Total alkalinity (mg $CaCO_3$/L)	Dissolved inorganic carbon (µg/L)	Silica (mg Si/L)	Nitrate (µg N/L)	Phosphorus (µg/L)	
										Total	Dissolved
	4	27-May	65	7.68	69	44.06	11103	2.22	14.2	7.0	.
		21-Jun	73	7.67	72	43.89	11066	2.27	12.4	6.1	.
		21-Jul	76	7.76	64	44.87	11208	2.17	11.6	5.6	.
		15-Aug	76	7.84	67	43.85	10867	2.15	11.4	5.7	.
		15-Sep	74	7.70	65	42.31	10701	2.20	28.7	7.3	.
		10-Oct	81	7.70	65	43.75	10991	2.13	19.6	.	.
Stuart 1997	1	22-May	78	7.29	49	37.69	11423	2.25	58.2	.	.
		21-Jun	89	7.77	72	41.61	11744	0.40	14.1	.	.
		16-Jul	.	7.80	72	40.60	11407	1.50	17.7	.	.
		13-Aug	91	7.93	69	40.17	11184	2.00	5.8	.	.
		12-Sep	89	7.82	69	40.24	11337	2.00	3.8	.	.
	2	22-May	74	7.17	71	41.49	12953	2.40	40.3	.	.
		21-Jun	82	7.74	97	37.91	10752	2.45	19.6	.	.
		16-Jul	.	7.81	68	38.50	10805	1.50	23.6	.	.
		13-Aug	89	7.91	63	38.20	10660	2.20	15.5	.	.
		12-Sep	84	7.80	67	37.30	10484	2.10	9.3	.	.
	3	23-May	74	7.71	72	37.99	10774	2.40	34.0	.	.
		20-Jun	82	7.79	68	38.33	10808	2.35	17.0	.	.
		17-Jul	.	7.85	71	36.87	10327	1.30	21.1	.	.
		15-Aug	85	7.82	67	37.36	10487	2.20	26.6	.	.
		13-Sep	87	7.80	64	37.59	10604	2.10	13.6	.	.
	4	23-May	74	7.63	67	37.70	10763	2.35	29.3	.	.
		20-Jun	85	7.89	87	39.06	10937	2.30	6.8	.	.
		17-Jul	.	7.95	67	38.00	10586	2.25	10.7	.	.
		15-Aug	87	7.87	65	37.55	10520	2.30	14.6	.	.
		13-Sep	.	7.80	64	37.31	10529	2.10	16.3	.	.

Table 3 (Cont.). Variation in mean epilimnetic chemical data for each station in Takla, Trembleur, and Stuart lakes.

Lake and year	Station	Date	Conductivity (µS/cm @ 25°C)	pH	Total dissolved solids (mg/L)	Total alkalinity (mg $CaCO_3$/L)	Dissolved inorganic carbon (µg/L)	Silica (mg Si/L)	Nitrate (µg N/L)	Phosphorus (µg/L)	
										Total	Dissolved
Stuart 1998	1	22-May	76	7.77	85	45.81	11424	2.29	17.4	10.8	6.6
		20-Jun	92	7.82	73	44.40	11030	2.23	20.8	11.2	10.0
		18-Jul	91	7.84	63	44.57	11040	2.10	27.2	9.4	6.7
		15-Aug	93	7.88	69	44.05	10897	2.08	4.4	7.3	5.0
		16-Sep	91	7.86	71	44.00	10905	2.01	11.1	9.2	4.4
		10-Oct	90	7.83	71	44.45	11078	1.94	14.1	6.4	4.9
	2	22-May	74	7.82	64	42.29	10509	2.25	14.5	10.2	7.1
		20-Jun	90	7.91	68	42.66	10517	2.19	15.4	11.4	8.4
		18-Jul	91	7.86	60	42.50	10522	2.09	17.2	8.0	6.7
		15-Aug	94	7.93	65	42.78	10537	2.02	5.4	7.1	4.8
		16-Sep	88	7.87	65	42.57	10545	1.99	5.4	5.6	4.6
		10-Oct	87	7.81	67	42.82	10698	2.01	9.9	6.9	5.2
	3	23-May	74	7.76	68	43.51	10850	2.28	6.1	8.8	5.3
		19-Jun	90	7.88	68	42.21	10427	2.16	13.8	10.0	7.7
		19-Jul	92	7.95	64	42.61	10467	2.01	15.4	10.0	7.3
		16-Aug	93	7.87	60	42.90	10619	1.94	3.1	6.8	4.6
		17-Sep	90	7.91	64	43.21	10673	1.97	2.2	5.4	3.6
		11-Oct	87	7.75	65	43.23	10863	1.95	7.3	7.4	4.5
	4	23-May	74	7.90	64	43.31	10697	2.17	3.0	9.4	5.6
		19-Jun	92	7.96	69	42.95	10572	2.11	7.4	10.2	12.0
		19-Jul	94	7.97	63	42.94	10553	2.02	11.5	8.9	5.3
		16-Aug	95	7.96	65	43.33	10660	1.94	4.5	.	.
		17-Sep	90	7.93	67	42.99	10602	1.93	3.9	5.5	4.5
		11-Oct	88	7.68	67	43.05	10940	1.95	10.3	6.2	5.3

Table 4. Variation in mean epilimnetic concentrations of particulate elements and molar ratios for each station in Takla, Trembleur, and Stuart lakes.

Lake and year	Station	Date	Particulate mass (µg/L)			Molar ratio		
			C	N	P	C/N	C/P	N/P
Takla 1996	1	26-May	262	27	1.5	12	467	40
		23-Jun	288	27	3.6	13	210	17
		16-Jul	277	26	2.2	12	333	27
		17-Aug	370	28	2.3	15	415	27
		10-Sep	362	39	2.1	11	456	42
		12-Oct	289	29	1.9	12	404	35
	2	23-Jun	258	21	1.7	15	403	28
		16-Jul	326	36	2.5	11	336	32
		17-Aug	325	23	1.6	16	525	32
		10-Sep	314	23	1.8	16	463	29
		12-Oct	234	22	2.0	12	310	25
	3	25-May	247	25	1.9	12	344	30
		24-Jun	312	31	2.1	12	384	32
		17-Jul	338	35	2.3	11	388	34
		18-Aug	329	33	2.2	12	395	33
		11-Sep	293	29	1.8	12	433	36
		13-Oct	264	22	1.7	14	401	28
	4	25-May	301	36	2.1	10	370	38
		24-Jun	313	32	2.3	11	359	31
		17-Jul	369	37	2.5	12	389	33
		18-Aug	315	28	2.4	13	346	26
		11-Sep	261	16	1.5	19	449	24
		13-Oct	288	22	1.6	15	465	30
Takla 1997	1	26-May	255	16	1.5	19	453	24
		17-Jun	331	34	4.1	12	211	18
		19-Jul	193	28	2.5	8	199	25
		17-Aug	237	30	2.2	9	285	31
		10-Sep	161	24	1.9	8	224	28
		7-Oct	241	19	2.0	15	319	21
	2	26-May	218	18	1.4	15	416	29
		17-Jun	241	27	3.8	10	164	16
		19-Jul	161	24	2.6	8	163	20
		17-Aug	265	31	2.0	10	350	35
		10-Sep	203	26	2.2	9	238	26
		7-Oct	259	20	2.0	15	335	22
	3	27-May	152	17	2.3	11	175	16
		18-Jun	176	27	3.1	8	149	19
		20-Jul	174	22	2.3	9	199	22
		18-Aug	177	21	1.7	10	269	27
		9-Sep	180	23	2.1	9	226	25
		8-Oct	202	17	1.9	14	282	20

Table 4 (Cont.). Variation in mean epilimnetic concentrations of particulate elements and molar ratios for each station in Takla, Trembleur, and Stuart lakes.

Lake and year	Station	Date	Particulate mass (µg /L)			Molar ratio		
			C	N	P	C/N	C/P	N/P
	4	27-May	195	18	2.0	13	251	19
		18-Jun	312	34	3.1	11	260	24
		20-Jul	181	20	1.5	11	312	29
		18-Aug	.	.	1.9	.	.	.
		9-Sep	189	25	2.1	9	232	26
		8-Oct	196	11	1.3	22	389	18
Takla								
1998	1	24-May	275	24	2.9	13	245	18
		17-Jun	171	22	2.2	9	200	22
		20-Jul	128	20	1.7	7	200	27
		12-Aug	.	.	2.2	.	.	.
		19-Sep	255	24	1.9	12	347	28
		7-Oct	229	16	2.4	17	246	14
	2	24-May	218	20	1.8	13	322	25
		17-Jun	142	17	1.8	10	204	20
		20-Jul	128	20	1.8	7	183	25
		12-Aug	242	23	2.1	13	305	24
		19-Sep	168	19	1.6	10	271	26
		7-Oct	221	14	1.8	19	326	17
	3	25-May	161	13	1.5	14	287	20
		18-Jun	154	19	2.2	9	185	20
		21-Jul	172	18	1.5	11	306	27
		13-Aug	214	21	1.8	12	315	27
		18-Sep	215	25	1.8	10	308	31
		8-Oct	261	16	2.0	19	346	18
	4	25-May	279	22	1.9	15	379	26
		18-Jun	213	22	2.1	12	261	23
		21-Jul	206	26	1.9	9	287	31
		13-Aug	190	19	2.0	12	245	20
		18-Sep	196	24	1.9	10	274	29
		8-Oct	256	19	1.9	16	348	22
Trembleur								
1996	1	23-May	285	24	2.6	14	283	20
		19-Jun	290	31	3.6	11	211	19
		22-Jul	377	36	3.1	12	319	26
		13-Aug	425	46	4.5	11	247	23
		13-Sep	487	43	2.6	13	493	37
		8-Oct	273	24	2.4	13	300	23
	2	23-May	361	36	3.5	12	270	23
		19-Jun	305	33	3.4	11	232	22
		22-Jul	290	32	2.7	11	277	26
		13-Aug	385	32	3.9	14	255	18

Table 4 (Cont.). Variation in mean epilimnetic concentrations of particulate elements and molar ratios for each station in Takla, Trembleur, and Stuart lakes.

Lake and year	Station	Date	Particulate mass (µg /L)			Molar ratio		
			C	N	P	C/N	C/P	N/P
		13-Sep	450	45	3.2	12	363	31
		8-Oct	323	32	2.4	12	355	30
Trembleur								
1997	1	24-May	289	34	3.7	10	202	20
		22-Jun	203	20	3.6	12	146	12
		15-Jul	175	23	2.7	9	167	18
		12-Aug	308	44	3.2	8	249	30
		14-Sep	399	42	3.6	11	286	26
	2	24-May	475	28	5.2	20	236	12
		22-Jun	249	26	5.3	11	121	11
		15-Jul	179	23	2.7	9	171	18
		12-Aug	196	23	2.8	10	184	18
Trembleur								
1998	1	21-May	694	52	4.7	16	381	24
		16-Jun	214	34	3.8	7	145	20
		17-Jul	250	28	3.3	11	196	18
		11-Aug	315	48	3.8	8	214	28
		15-Sep	208	26	3.1	10	173	18
		6-Oct	279	21	2.4	16	306	19
	2	21-May	491	62	5.2	9	244	26
		16-Jun	252	30	4.5	10	144	15
		11-Aug	248	34	3.7	9	176	21
		15-Sep	223	27	2.3	10	250	26
		6-Oct	305	25	2.7	15	297	20
Stuart								
1996	1	24-May	465	40	3.3	14	364	27
		20-Jun	468	49	3.7	11	327	29
		19-Jul	354	39	2.3	11	398	38
		14-Aug	421	44	4.0	11	275	25
		14-Sep	433	44	3.9	11	291	25
		9-Oct	408	41	3.3	12	319	28
	2	24-May	657	70	5.2	11	326	30
		20-Jun	377	46	3.3	10	300	31
		19-Jul	386	41	1.6	11	623	57
		14-Aug	412	36	3.3	14	323	24
		14-Sep	401	42	3.3	11	319	29
		9-Oct	328	38	3.4	10	249	24
	3	21-Jun	394	45	3.4	10	299	29
		21-Jul	334	34	2.2	11	401	35
		15-Aug	410	40	3.4	12	316	26
		15-Sep	405	33	2.5	14	418	29
		10-Oct	464	40	2.8	14	428	32

Table 4 (Cont.). Variation in mean epilimnetic concentrations of particulate elements and molar ratios for each station in Takla, Trembleur, and Stuart lakes.

Lake and year	Station	Date	Particulate mass (µg /L)			Molar ratio		
			C	N	P	C/N	C/P	N/P
	4	27-May	434	41	3.1	13	368	29
		21-Jun	405	49	2.9	10	367	38
		21-Jul	292	34	2.4	10	320	32
		15-Aug	444	45	4.0	11	286	25
		15-Sep	384	35	2.5	13	397	31
		10-Oct	283	28	2.5	12	298	25
Stuart								
1997	1	22-May	299	37	2.8	9	276	29
		21-Jun	393	56	5.7	8	180	22
		16-Jul	314	45	4.5	8	180	22
		13-Aug	550	71	5.0	9	287	32
		12-Sep	342	50	3.9	8	226	28
	2	22-May	552	60	7.5	11	191	18
		21-Jun	323	43	4.5	9	187	21
		16-Jul	262	34	3.8	9	180	20
		13-Aug	404	51	4.4	9	240	26
		12-Sep	310	45	3.4	8	236	29
	3	23-May	258	41	4.5	7	148	20
		20-Jun	254	35	5.1	8	130	15
		17-Jul	342	32	4.0	12	221	18
		15-Aug	252	23	3.6	13	183	14
		13-Sep	286	31	3.5	11	211	20
	4	23-May	310	40	4.1	9	195	22
		20-Jun	250	35	5.2	8	124	15
		17-Jul	281	36	4.3	9	171	19
		15-Aug	339	41	3.4	10	261	27
		13-Sep	412	30	2.9	16	373	23
Stuart								
1998	1	22-May	549	58	4.8	11	298	27
		20-Jun	173	33	3.9	6	116	19
		18-Jul	360	35	3.4	12	278	23
		15-Aug	322	39	5.3	10	157	16
		16-Sep	293	41	4.4	8	172	21
		10-Oct	338	34	4.1	12	215	18
	2	22-May	450	53	4.2	10	276	28
		20-Jun	173	30	2.4	7	186	27
		18-Jul	310	31	4.0	12	203	17
		15-Aug	256	33	4.4	9	152	17
		16-Sep	250	35	3.9	8	165	20
		10-Oct	349	32	3.7	13	243	19

Table 4 (Cont.). Variation in mean epilimnetic concentrations of particulate elements and molar ratios for each station in Takla, Trembleur, and Stuart lakes.

Lake and year	Station	Date	Particulate mass (µg /L)			Molar ratio		
			C	N	P	C/N	C/P	N/P
	3	23-May	358	43	3.9	10	240	25
		19-Jun	192	31	2.4	7	211	29
		19-Jul	303	29	2.5	12	319	26
		16-Aug	206	24	3.7	10	144	14
		17-Sep	227	26	3.1	10	192	19
		11-Oct	271	22	3.1	14	230	16
	4	23-May	426	56	4.2	9	262	29
		19-Jun	211	34	2.5	7	218	30
		19-Jul	322	29	2.8	13	302	23
		16-Aug	280	28	3.4	12	216	19
		17-Sep	227	26	2.5	10	239	23
		11-Oct	306	25	2.9	15	273	19

Table 5. Variation in mean epilimnetic biological data for each station in Takla, Trembleur, and Stuart lakes.

Lake and year	Station	Date	Bacteria ($x10^6$/mL)	Total chlorophyll (µg/L)	Daily photosynthetic rate (mg C/m^2)	Phytoplankton no.$x10^3$/mL		
						Pico. (0.2-2µm)	Nano. (2.0-20 µm)	Micro. (>20 µm)
Takla								
1996	1	26-May	0.55	0.30	16.4	6.2	0.53	0.17
		23-Jun	0.67	0.82	68.2	9.2	1.53	0.20
		16-Jul	0.83	1.21	89.7	5.3	1.02	0.87
		17-Aug	1.04	1.31	62.7	21.0	2.08	0.42
		10-Sep	0.95	1.00	71.5	35.5	2.22	0.43
		12-Oct	1.03	0.79	34.4	18.0	1.29	0.33
	2	23-Jun	0.65	0.83	110.1	5.2	0.95	0.23
		16-Jul	0.88	1.86	105.5	7.1	1.41	1.10
		17-Aug	0.83	1.19	60.0	15.6	1.63	0.54
		10-Sep	1.26	0.98	40.5	19.0	1.43	0.55
		12-Oct	1.08	0.93	31.4	16.6	1.10	0.41
	3	25-May	0.46	0.55	24.1	4.1	0.42	0.20
		24-Jun	0.64	1.49	89.5	7.9	1.38	0.53
		17-Jul	0.85	1.13	40.2	9.6	1.16	0.48
		18-Aug	1.18	0.91	68.3	21.7	1.47	0.56
		11-Sep	1.28	1.14	58.3	33.6	1.14	0.32
		13-Oct	0.91	0.81	36.5	14.1	0.77	0.32
	4	25-May	0.42	0.99	40.3	8.7	0.84	0.29
		24-Jun	0.49	1.25	76.2	9.4	1.29	0.51
		17-Jul	1.00	1.42	41.0	9.3	1.41	0.65
		18-Aug	1.13	1.34	73.2	16.1	1.09	0.27
		11-Sep	1.08	1.02	52.0	25.0	1.72	0.31
		13-Oct	0.99	0.95	24.6	13.1	0.88	0.25
Takla								
1997	1	26-May	0.88	0.19	13.5	1.3	0.70	0.36
		17-Jun	0.81	0.61	53.0	6.7	1.80	0.96
		19-Jul	0.60	1.37	76.7	29.5	1.87	1.07
		17-Aug	1.10	0.96	76.6	22.6	3.85	1.16

Table 5 (Cont.). Variation in mean epilimnetic biological data for each station in Takla, Trembleur, and Stuart lakes.

Lake and year	Station	Date	Bacteria ($x10^6$/mL)	Total chlorophyll (µg/L)	Daily photosynthetic rate (mg C/m^2)	Phytoplankton no.$x10^3$/mL		
						Pico. (0.2-2µm)	Nano. (2.0-20 µm)	Micro. (>20 µm)
		10-Sep	1.39	1.29	65.3	26.3	2.69	0.86
		7-Oct	0.96	0.93	25.8	0.7	1.99	0.81
	2	26-May	0.70	0.19	13.6	1.1	0.61	0.29
		17-Jun	0.78	0.89	33.3	5.0	2.45	1.01
		19-Jul	0.72	0.87	52.9	45.0	1.73	0.92
		17-Aug	1.33	0.83	75.6	17.1	2.46	0.63
		10-Sep	1.60	1.45	53.9	25.7	4.52	1.42
		7-Oct	1.02	0.96	21.8	0.6	1.91	1.60
	3	27-May	0.85	0.27	34.7	2.5	0.98	0.40
		18-Jun	0.91	0.64	58.1	5.7	1.90	1.13
		20-Jul	0.79	1.14	48.1	27.1	2.03	0.85
		18-Aug	1.27	1.05	76.1	24.2	2.64	0.46
		9-Sep	0.99	1.30	118.1	22.1	2.56	0.94
		8-Oct	1.25	0.88	32.1	8.9	1.38	0.70
	4	27-May	0.79	0.44	130.2	1.6	1.33	0.36
		18-Jun	0.88	0.72	63.3	6.6	1.58	1.02
		20-Jul	1.03	0.81	44.7	32.9	1.78	0.45
		18-Aug	1.64	1.21	50.6	19.9	4.91	1.13
		9-Sep	1.32	1.05	74.2	14.6	2.17	0.82
		8-Oct	1.04	0.36	20.4	2.7	1.99	0.60
Takla								
1998	1	24-May	.	0.83	79.5	.	.	.
		17-Jun	.	0.81	45.2	.	.	.
		20-Jul	.	1.01	80.8	.	.	.
		12-Aug	.	1.15	76.8	.	.	.
		19-Sep	.	1.26	60.3	.	.	.
		7-Oct	.	1.09	65.0	.	.	.
	2	24-May	.	0.74	51.4	.	.	.
		17-Jun	.	1.20	57.0	.	.	.
		20-Jul	.	1.14	86.3	.	.	.

Table 5 (Cont.). Variation in mean epilimnetic biological data for each station in Takla, Trembleur, and Stuart lakes.

Lake and year	Station	Date	Bacteria ($x10^6$/mL)	Total chlorophyll (µg/L)	Daily photosynthetic rate (mg C/m^2)	Phytoplankton no.$x10^3$/mL		
						Pico. (0.2-2µm)	Nano. (2.0-20 µm)	Micro. (>20 µm)
		12-Aug	.	1.50	98.7	.	.	.
		19-Sep	.	1.35	67.8	.	.	.
		7-Oct	.	1.24	74.0	.	.	.
	3	25-May	.	0.33	29.1	.	.	.
		18-Jun	.	1.04	169.5	.	.	.
		21-Jul	.	0.90	92.0	.	.	.
		13-Aug	.	1.80	110.0	.	.	.
		18-Sep	.	2.02	88.1	.	.	.
		8-Oct	.	1.43	42.9	.	.	.
	4	25-May	1.44	1.06	45.0	14.8	0.76	0.55
		18-Jun	1.14	1.47	174.5	18.0	0.50	0.66
		21-Jul	2.43	1.52	111.2	26.6	0.80	0.44
		13-Aug	1.76	1.49	72.0	19.8	0.83	0.18
		18-Sep	1.16	1.70	88.3	23.8	0.62	0.50
		8-Oct	1.70	1.45	48.2	12.1	0.46	0.40
Trembleur								
1996	1	23-May	0.79	0.60	34.6	13.5	0.62	0.13
		19-Jun	0.49	1.86	87.6	9.3	1.73	0.50
		22-Jul	0.68	1.17	105.1	10.7	0.89	0.42
		13-Aug	1.40	1.16	143.1	27.1	0.75	0.23
		13-Sep	1.24	2.01	56.2	26.6	1.01	0.53
		8-Oct	1.16	1.38	76.9	18.5	0.91	0.25
	2	23-May	0.89	1.09	42.7	10.2	2.38	0.45
		19-Jun	0.72	0.99	66.1	10.5	2.69	0.97
		22-Jul	0.70	1.25	126.2	9.6	1.06	0.42
		13-Aug	1.31	1.05	144.1	23.8	0.90	0.23
		13-Sep	0.83	1.81	55.2	27.4	1.08	0.25
		8-Oct	1.08	1.18	66.7	16.7	0.91	0.21

Table 5 (Cont.). Variation in mean epilimnetic biological data for each station in Takla, Trembleur, and Stuart lakes.

Lake and year	Station	Date	Bacteria ($x10^6$/mL)	Total chlorophyll (µg/L)	Daily photosynthetic rate (mg C/m^2)	Phytoplankton no.$x10^3$/mL		
						Pico. (0.2-2µm)	Nano. (2.0-20 µm)	Micro. (>20 µm)
Trembleur								
1997	1	24-May	0.96	0.39	53.5	3.1	0.89	0.37
		22-Jun	1.50	1.42	131.8	6.3	2.23	1.06
		15-Jul	1.22	1.11	161.3	5.3	0.98	0.49
		12-Aug	1.18	1.25	92.6	14.6	2.17	1.26
		14-Sep	1.54	1.88	67.7	41.4	2.92	1.62
	2	24-May	1.15	0.82	59.6	3.7	3.43	1.21
		22-Jun	1.68	1.89	99.7	8.2	2.51	1.73
		15-Jul	1.10	1.41	141.2	18.9	2.84	1.37
		12-Aug	1.84	1.02	67.5	15.5	2.64	1.77
Trembleur								
1998	1	21-May	1.50	0.97	112.5	26.6	1.82	0.82
		16-Jun	1.69	1.05	132.2	15.4	2.70	0.98
		17-Jul	1.88	0.65	230.3	36.1	1.34	0.47
		11-Aug	1.87	1.99	129.5	28.8	2.34	0.81
		15-Sep	1.43	1.77	142.0	41.1	0.63	0.70
		6-Oct	1.70	1.68	38.0	20.4	0.64	0.52
	2	21-May	.	2.48	161.2	.	.	.
		16-Jun	.	1.20	94.9	.	.	.
		11-Aug	.	1.72	123.4	.	.	.
		15-Sep	.	1.73	144.1	.	.	.
		6-Oct	.	1.97	40.2	.	.	.
Stuart								
1996	1	24-May	0.71	2.40	186.5	39.5	1.52	0.64
		20-Jun	0.83	3.00	139.9	29.8	3.48	0.95
		19-Jul	0.96	2.07	83.3	81.9	3.55	0.64
		14-Aug	1.35	2.37	174.7	59.3	3.56	0.61
		14-Sep	0.89	2.42	297.2	61.1	3.57	0.59

Table 5 (Cont.). Variation in mean epilimnetic biological data for each station in Takla, Trembleur, and Stuart lakes.

Lake and year	Station	Date	Bacteria ($x10^6$/mL)	Total chlorophyll (µg/L)	Daily photosynthetic rate (mg C/m^2)	Phytoplankton no.$x10^3$/mL		
						Pico. (0.2-2µm)	Nano. (2.0-20 µm)	Micro. (>20 µm)
		9-Oct	0.86	3.01	94.9	34.9	1.67	0.62
	2	24-May	0.85	6.88	212.4	18.6	6.74	1.25
		20-Jun	0.71	1.95	95.3	15.2	4.67	1.06
		19-Jul	0.83	2.16	83.6	42.8	4.21	0.67
		14-Aug	1.44	1.72	162.7	54.1	3.36	0.51
		14-Sep	1.08	2.60	188.2	51.3	3.01	0.60
		9-Oct	1.79	3.03	54.7	22.9	1.89	0.60
	3	21-Jun	0.71	2.31	142.5	22.8	4.13	0.84
		21-Jul	0.80	1.53	221.3	68.90	3.04	0.60
		15-Aug	1.49	1.31	172.3	75.4	2.68	0.24
		15-Sep	1.15	1.62	120.9	32.3	3.23	0.41
		10-Oct	1.70	1.82	99.8	25.9	1.91	0.38
	4	27-May	0.75	2.21	178.1	38.9	2.13	0.74
		21-Jun	0.69	1.45	101.6	33.8	2.43	0.70
		21-Jul	1.29	1.87	218.7	17.3	2.88	0.36
		15-Aug	1.30	1.57	186.1	45.4	2.81	0.39
		15-Sep	1.00	1.90	110.2	21.9	2.39	0.47
		10-Oct	1.51	1.39	106.9	22.2	1.58	0.48
Stuart								
1997	1	22-May	1.22	1.07	83.8	4.1	1.36	0.29
		21-Jun	1.01	2.76	179.1	18.7	1.87	0.96
		16-Jul	2.07	2.20	329.7	124.1	2.75	2.35
		13-Aug	2.45	3.17	374.5	84.8	2.50	2.49
		12-Sep	1.97	3.18	210.1	60.2	3.01	2.34
	2	22-May	1.44	1.57	77.1	5.1	2.56	0.50
		21-Jun	1.03	2.44	145.4	9.2	4.79	1.37
		16-Jul	2.19	1.49	266.7	44.5	4.82	2.20
		13-Aug	2.25	1.81	224.8	61.6	2.42	2.16
		12-Sep	1.96	2.49	186.9	50.0	2.33	1.43

Table 5 (Cont.). Variation in mean epilimnetic biological data for each station in Takla, Trembleur, and Stuart lakes.

Lake and year	Station	Date	Bacteria ($x10^6$/mL)	Total chlorophyll (µg/L)	Daily photosynthetic rate (mg C/m^2)	Phytoplankton no.$x10^3$/mL		
						Pico. (0.2-2µm)	Nano. (2.0-20 µm)	Micro. (>20 µm)
	3	23-May	1.32	2.14	130.6	8.0	2.31	1.03
		20-Jun	1.33	1.29	141.8	15.4	2.30	1.26
		17-Jul	1.92	1.80	255.6	46.0	3.60	2.15
		15-Aug	2.06	1.29	142.3	41.9	.	.
		13-Sep	2.01	1.77	118.4	29.4	1.54	1.35
	4	23-May	1.14	2.01	200.1	17.6	3.04	0.80
		20-Jun	1.86	1.36	115.0	21.4	2.91	0.84
		17-Jul	2.22	1.91	236.5	11.2	4.98	2.24
		15-Aug	2.26	1.69	129.8	53.7	.	.
		13-Sep	1.92	1.48	103.8	45.4	1.94	0.97
Stuart 1998	1	22-May	.	2.42	194.6	.	.	.
		20-Jun	.	1.47	238.4	.	.	.
		18-Jul	.	1.66	233.1	.	.	.
		15-Aug	.	3.08	232.2	.	.	.
		16-Sep	.	3.51	261.8	.	.	.
		10-Oct	.	3.47	109.8	.	.	.
	2	22-May	.	4.11	114.5	.	.	.
		20-Jun	.	0.89	164.2	.	.	.
		18-Jul	.	1.65	214.4	.	.	.
		15-Aug	.	2.60	213.0	.	.	.
		16-Sep	.	2.48	191.2	.	.	.
		10-Oct	.	2.82	75.7	.	.	.
	3	23-May	.	1.32	126.6	.	.	.
		19-Jun	.	1.27	151.3	.	.	.
		19-Jul	.	1.69	177.0	.	.	.
		16-Aug	.	2.22	177.5	.	.	.
		17-Sep	.	2.58	147.1	.	.	.
		11-Oct	.	2.22	80.3	.	.	.

Table 5 (Cont.). Variation in mean epilimnetic biological data for each station in Takla, Trembleur, and Stuart lakes.

Lake and year	Station	Date	Bacteria ($x10^6$/mL)	Total chlorophyll (µg/L)	Daily photosynthetic rate (mg C/m^2)	Phytoplankton no.$x10^3$/mL		
						Pico. (0.2-2µm)	Nano. (2.0-20 µm)	Micro. (>20 µm)
	4	23-May	1.36	4.41	230.2	27.5	3.50	0.71
		19-Jun	1.89	1.60	132.5	25.3	2.39	0.86
		19-Jul	2.27	1.57	180.7	50.0	1.28	0.48
		16-Aug	2.51	2.31	184.7	39.0	1.87	1.05
		17-Sep	1.18	2.57	140.1	28.5	1.72	1.19
		11-Oct	1.52	2.21	118.5	13.6	1.37	0.48

Table 6. Variation in mean epilimnetic biological data for each station in Takla, Trembleur, and Stuart lakes.

Lake and year	Station	Date	Chlorophyll (µg/L) Pico. (<=2 µm)	Chlorophyll (µg/L) Nano. (2-20 µm)	Chlorophyll (µg/L) Micro. (>20 µm)	Daily photosynthetic rate (mg C/m^2) Pico. (0.2-2 µm)	Daily photosynthetic rate (mg C/m^2) Nano. (2-20 µm)	Daily photosynthetic rate (mg C/m^2) Micro. (>20 µm)
Takla								
1996	4	25-May	0.49	0.39	0.11	18	16	7
		24-Jun	0.73	0.42	0.10	30	37	10
		17-Jul	0.86	0.46	0.10	22	15	4
		18-Aug	0.68	0.56	0.10	34	35	4
		11-Sep	0.21	0.74	0.08	23	25	5
		13-Oct	0.48	0.38	0.09	9	14	2
Takla								
1997	4	27-May	0.14	0.21	0.09	53	55	22
		18-Jun	0.05	0.50	0.17	26	27	11
		20-Jul	0.47	0.29	0.06	19	19	6
		18-Aug	0.54	0.51	0.16	7	33	12
		9-Sep	0.65	0.32	0.08	31	30	13
		8-Oct	0.20	0.09	0.07	10	7	3
Trembleur								
1996	1	23-May	0.35	0.22	0.04	14	18	2
		19-Jun	0.95	0.81	0.10	30	50	8
		22-Jul	0.62	0.41	0.14	37	61	6
		13-Aug	0.78	0.30	0.08	64	64	15
		13-Sep	0.27	0.61	1.13	23	20	14
		8-Oct	0.53	0.72	0.13	29	43	6
Trembleur								
1997	1	24-May	0.24	0.08	0.07	34	17	3
		22-Jun	0.70	0.54	0.19	48	66	18
		15-Jul	0.56	0.42	0.14	49	82	31
		12-Aug	0.60	0.15	0.51	7	54	33
		14-Sep	0.84	0.86	0.18	17	37	14
Stuart								
1996	4	27-May	0.95	0.96	0.30	67	81	31
		21-Jun	0.91	0.36	0.18	44	42	16
		21-Jul	0.93	0.62	0.33	64	123	32
		15-Aug	0.87	0.48	0.22	83	71	32
		15-Sep	0.66	0.66	0.59	43	33	17
		10-Oct	0.24	0.60	0.55	41	26	41
Stuart								
1997	4	23-May	0.90	0.72	0.40	107	70	23
		20-Jun	0.61	0.63	0.12	38	61	16
		17-Jul	0.98	0.67	0.27	91	95	51
		15-Aug	0.95	0.52	0.23	25	71	34
		13-Sep	0.60	0.39	0.49	13	50	41

Table 7. Variation in density of the most common zooplankton in the lake. Data were collected by 30-m vertical hauls, using a Wisconsin net, for each station in Takla, Trembleur, and Stuart lakes.

Lake and year	Station	Date	Zooplankton no. x $10^3/m^2$				
			Macrozooplankton (>250 µm)	*Daphnia*	Bosminidae	Cyclopidae	Diaptomidae
Takla 1996	1	26-May	56.6	0.0	0.4	29.8	5.3
		23-Jun	130.7	1.0	1.6	86.8	19.7
		16-Jul	115.2	1.3	3.6	78.4	29.5
		17-Aug	166.3	11.8	31.4	75.1	45.5
		10-Sep	177.2	19.9	11.9	73.2	71.7
		12-Oct	117.4	3.8	2.4	38.9	71.6
	2	23-Jun	175.9	1.7	1.1	141.2	4.7
		16-Jul	327.6	1.6	6.8	162.8	150.3
		17-Aug	125.0	3.4	29.3	54.9	36.7
		10-Sep	122.7	10.8	21.4	71.4	18.1
		12-Oct	68.1	1.0	2.8	54.0	10.1
	3	25-May	84.6	0.2	0.3	69.9	3.7
		24-Jun	372.5	13.9	1.0	238.9	48.4
		17-Jul	391.1	4.0	0.0	268.5	112.5
		18-Aug	184.4	8.1	15.9	117.7	40.9
		11-Sep	165.2	17.5	15.2	80.4	51.0
		13-Oct	83.8	3.8	3.8	45.2	30.5
	4	25-May	108.6	0.3	0.0	78.4	6.4
		24-Jun	190.2	4.4	0.0	116.1	27.6
		17-Jul	305.1	14.3	4.5	135.5	137.8
		18-Aug	233.1	52.4	16.8	114.5	47.1
		11-Sep	142.5	16.8	14.0	88.7	22.4
		13-Oct	101.4	8.9	3.6	61.6	26.8
Takla 1997	1	26-May	36.7	0.2	0.2	17.4	1.8
		17-Jun	383.5	2.0	0.0	153.5	166.3
		19-Jul	181.1	14.4	12.8	59.8	88.7
		17-Aug	108.7	6.9	1.4	44.9	54.6
		10-Sep	104.8	8.7	3.0	44.9	47.0
		7-Oct	58.3	3.9	5.7	28.5	19.9
	2	26-May	70.2	0.6	4.1	33.2	4.5
		17-Jun	382.8	4.4	3.0	197.1	64.3
		19-Jul	295.8	17.5	8.3	86.3	181.3
		17-Aug	143.3	24.3	9.1	56.2	51.7
		10-Sep	101.5	6.5	14.3	53.4	26.8
		7-Oct	58.6	2.2	3.7	38.0	14.6
	3	27-May	102.5	1.9	0.5	78.1	5.5
		18-Jun	343.8	4.1	6.4	229.7	39.0
		20-Jul	233.4	12.7	19.8	85.1	111.1
		18-Aug	162.5	35.2	9.7	72.8	43.8
		9-Sep	181.0	16.8	7.1	93.5	63.0
		8-Oct	124.4	11.8	3.2	88.8	19.7

Table 7 (Cont.). Variation in density of the most common zooplankton in the lake. Data were collected by 30-m vertical hauls, using a Wisconsin net, for each station in Takla, Trembleur, and Stuart lakes.

Lake and year	Station	Date	Zooplankton density no. x $10^3/m^2$				
			Macrozooplankton (>250 µm)	*Daphnia*	Bosminidae	Cyclopidae	Diaptomidae
	4	27-May	60.5	0.1	0.3	32.9	3.5
		18-Jun	142.0	1.0	0.0	75.2	26.8
		20-Jul	142.7	12.3	10.3	75.8	41.8
		18-Aug	181.6	45.3	41.9	78.4	15.2
		9-Sep	77.4	10.0	9.0	45.4	12.7
		8-Oct	80.7	8.8	7.5	48.0	16.0
Takla							
1998	1	24-May	353.9	1.9	3.0	253.3	22.7
		17-Jun	329.6	8.9	16.6	150.4	110.6
		20-Jul	156.5	11.4	12.1	51.8	74.1
		12-Aug	201.1	51.1	16.7	67.5	64.9
		19-Sep	102.6	8.9	8.2	48.9	36.2
		7-Oct	113.0	6.1	9.8	48.9	48.0
	2	24-May	66.2	0.5	0.2	47.4	5.7
		17-Jun	207.1	3.3	3.0	109.8	65.1
		20-Jul	192.3	14.8	7.5	73.2	91.1
		12-Aug	202.4	46.9	18.2	55.1	79.1
		19-Sep	103.0	15.0	10.5	58.9	18.3
		7-Oct	47.0	2.5	3.5	34.3	6.6
	3	25-May	111.2	1.1	1.1	90.8	5.1
		18-Jun	395.9	5.4	8.0	206.4	126.8
		21-Jul	195.7	21.0	4.9	117.9	49.0
		13-Aug	235.0	38.5	20.4	140.7	33.5
		18-Sep	176.0	11.4	12.1	91.1	60.6
		8-Oct	104.9	4.4	6.9	73.8	18.9
	4	25-May	139.0	0.3	1.1	65.4	29.7
		18-Jun	173.0	0.4	5.9	86.0	55.6
		21-Jul	128.8	25.6	32.4	64.8	5.0
		13-Aug	270.6	40.7	138.1	83.7	5.8
		18-Sep	144.6	28.1	42.8	66.7	6.0
		8-Oct	62.3	12.9	11.1	33.1	4.7
Trembleur							
1996	1	23-May	184.9	1.5	1.7	126.3	42.7
		19-Jun	684.8	1.6	3.6	566.4	44.2
		22-Jul	629.0	27.1	70.5	165.0	335.9
		13-Aug	433.3	45.0	48.4	117.0	222.4
		13-Sep	285.6	34.7	36.6	79.9	133.3
		8-Oct	165.2	8.0	2.8	62.6	91.6
	2	23-May	175.3	1.1	3.5	98.7	32.9
		19-Jun	546.3	6.1	11.0	291.3	57.9
		22-Jul	435.6	97.4	72.8	165.5	84.8
		13-Aug	402.5	83.8	44.6	84.8	185.3

Table 7 (Cont.). Variation in density of the most common zooplankton in the lake. Data were collected by 30-m vertical hauls, using a Wisconsin net, for each station in Takla, Trembleur, and Stuart lakes.

Lake and year	Station	Date	Zooplankton density no. x $10^3/m^2$				
			Macrozooplankton (>250 µm)	*Daphnia*	Bosminidae	Cyclopidae	Diaptomidae
		13-Sep	201.7	20.0	6.2	82.3	93.1
		8-Oct	233.7	25.3	18.3	66.5	123.2
Trembleur							
1997	1	24-May	145.6	2.2	0.5	83.9	54.3
		22-Jun	746.5	9.7	2.4	439.3	159.5
		15-Jul	829.9	26.7	13.0	373.6	387.3
		12-Aug	336.4	55.3	12.9	149.4	117.5
		14-Sep	220.7	5.9	26.2	89.6	98.5
	2	24-May	110.3	2.3	1.5	52.9	32.9
		22-Jun	350.7	2.9	3.2	225.9	84.7
		15-Jul	471.3	96.3	6.8	201.0	153.9
		12-Aug	142.7	26.5	3.2	82.9	27.9
Trembleur							
1998	1	21-May	106.4	1.0	2.3	67.7	13.0
		16-Jun	457.7	12.4	35.0	325.0	77.2
		17-Jul	495.9	50.2	32.3	218.3	191.6
		11-Aug	372.4	20.2	16.9	204.8	128.6
		15-Sep	200.2	4.8	23.2	87.9	80.6
		6-Oct	271.1	3.4	8.8	115.9	138.2
	2	21-May	404.0	5.5	1.0	218.3	49.3
		16-Jun	524.3	39.8	25.0	283.0	110.1
		11-Aug	300.5	54.6	17.6	153.6	71.0
		15-Sep	112.4	6.9	17.5	54.5	30.8
		6-Oct	96.4	5.5	14.9	27.0	46.5
Stuart							
1996	1	24-May	396.5	0.8	0.0	310.3	19.3
		20-Jun	458.0	4.6	37.8	257.0	118.6
		19-Jul	170.9	2.0	21.6	78.9	65.6
		14-Aug	172.4	3.5	16.3	91.7	50.5
		14-Sep	333.6	8.9	10.6	244.9	57.9
		9-Oct	427.2	0.7	13.0	390.1	16.4
	2	24-May	530.3	4.5	1.3	204.7	28.8
		20-Jun	240.1	1.4	5.6	107.2	111.5
		19-Jul	568.2	17.0	133.9	101.0	313.9
		14-Aug	253.0	2.1	36.2	96.8	114.8
		14-Sep	195.5	10.8	5.9	114.9	60.7
		9-Oct	231.4	5.7	1.5	174.5	46.7
	3	21-Jun	355.1	7.7	15.9	223.2	99.3
		21-Jul	228.1	8.1	10.6	103.3	103.9
		15-Aug	144.0	9.5	7.8	59.9	64.3
		15-Sep	306.4	22.4	4.0	138.8	139.5

Table 7 (Cont.). Variation in density of the most common zooplankton in the lake. Data were collected by 30-m vertical hauls, using a Wisconsin net, for each station in Takla, Trembleur, and Stuart lakes.

Lake and year	Station	Date	Zooplankton density no. x $10^3/m^2$				
			Macrozooplankton (>250 µm)	*Daphnia*	Bosminidae	Cyclopidae	Diaptomidae
		10-Oct	402.2	20.6	2.0	250.0	122.0
	4	27-May	355.8	0.0	0.0	224.1	7.2
		21-Jun	387.8	12.1	11.7	187.2	167.8
		21-Jul	378.4	15.9	48.7	128.5	179.9
		15-Aug	197.8	8.9	12.8	103.3	69.6
		15-Sep	231.9	2.5	0.0	144.5	78.2
		10-Oct	507.2	7.0	2.2	354.9	139.6
Stuart							
1997	1	22-May	413.7	2.1	0.0	249.3	24.3
		21-Jun	337.8	3.2	5.0	209.5	111.7
		16-Jul	314.2	3.5	8.8	163.2	136.7
		13-Aug	240.7	2.3	3.4	140.4	75.2
		12-Sep	259.0	2.7	32.2	178.2	30.8
	2	22-May	400.5	3.6	0.2	162.8	2.9
		21-Jun	462.3	3.6	1.5	238.4	209.6
		16-Jul	261.0	2.5	3.7	128.2	124.4
		13-Aug	285.3	13.8	16.5	75.0	173.8
		12-Sep	188.4	2.0	0.0	105.0	67.8
	3	23-May	242.4	1.8	0.0	70.0	10.6
		20-Jun	474.8	1.1	1.0	290.1	175.5
		17-Jul	234.4	0.7	0.8	85.5	144.4
		15-Aug	263.7	11.7	11.6	112.3	126.8
		13-Sep	207.2	33.2	3.2	77.7	79.6
	4	23-May	531.1	5.0	0.0	338.7	17.8
		20-Jun	561.3	97.8	1.0	144.0	305.0
		17-Jul	275.8	2.4	1.8	115.5	130.1
		15-Aug	350.8	87.3	9.4	88.1	164.7
		13-Sep	167.3	4.0	4.0	79.0	72.6
Stuart							
1998	1	22-May	231.1	1.2	2.2	160.4	36.2
		20-Jun	334.2	8.6	24.3	179.3	119.1
		18-Jul	301.1	7.3	43.3	187.9	57.4
		15-Aug	250.9	15.2	7.0	161.5	56.2
		16-Sep	413.9	4.2	7.8	333.7	53.0
		10-Oct	593.5	1.3	11.0	534.5	40.2
	2	22-May	296.4	2.0	2.0	154.5	50.5
		20-Jun	378.7	3.0	15.2	231.3	123.9
		18-Jul	296.0	7.4	11.4	123.1	148.4
		15-Aug	202.3	1.4	0.7	108.1	82.9
		16-Sep	327.3	12.3	2.4	260.6	38.2
		10-Oct	414.7	7.2	29.9	354.6	22.6

Table 7 (Cont.). Variation in density of the most common zooplankton in the lake. Data were collected by 30-m vertical hauls, using a Wisconsin net, for each station in Takla, Trembleur, and Stuart lakes.

Lake and year	Station	Date	Zooplankton density no. x $10^3/m^2$				
			Macrozooplankton (>250 µm)	*Daphnia*	Bosminidae	Cyclopidae	Diaptomidae
	3	23-May	678.9	7.9	13.5	189.0	342.5
		19-Jun	465.8	7.3	68.0	255.0	132.4
		19-Jul	192.8	14.5	9.3	84.3	77.1
		16-Aug	383.5	14.6	10.4	217.2	135.9
		17-Sep	265.8	10.3	8.8	214.6	21.4
		11-Oct	409.3	19.2	34.1	334.1	17.7
	4	23-May	725.8	1.2	11.3	467.3	87.0
		19-Jun	272.8	17.5	76.5	114.8	59.4
		19-Jul	390.8	63.4	39.0	179.3	99.8
		16-Aug	249.9	30.9	21.9	144.1	47.7
		17-Sep	651.8	27.2	18.8	545.6	50.8
		11-Oct	501.6	5.3	39.3	434.9	20.5

Table 8. Variation in biomass of the most common zooplankton in the lake. Data were collected by 30-m vertical hauls, using a Wisconsin net, for each station in Takla, Trembleur, and Stuart lakes.

Lake and year	Station	Date	Zooplankton biomass mg dry wt./m²				
			Macrozooplankton (>250 µm)	*Daphnia*	Bosminidae	Cyclopidae	Diaptomidae
Takla							
1996	1	26-May	93.1	0.2	0.8	73.5	11.0
		23-Jun	278.1	6.4	6.0	225.4	31.2
		16-Jul	350.4	10.0	11.6	196.0	116.0
		17-Aug	774.9	83.0	100.1	238.1	328.2
		10-Sep	979.4	162.9	37.3	262.5	505.7
		12-Oct	773.4	31.3	9.3	126.3	586.6
	2	23-Jun	340.0	5.8	3.8	311.8	8.8
		16-Jul	880.7	10.0	24.5	373.9	449.1
		17-Aug	599.5	34.3	101.8	193.8	255.9
		10-Sep	515.7	72.5	71.6	208.1	160.0
		12-Oct	263.1	7.5	11.4	173.0	71.0
	3	25-May	209.4	1.1	0.7	189.9	14.1
		24-Jun	749.2	69.8	1.7	568.3	78.7
		17-Jul	1071.1	26.9	0.0	693.8	346.5
		18-Aug	837.4	69.4	59.3	367.1	322.9
		11-Sep	880.4	133.6	56.1	249.6	420.9
		13-Oct	436.8	33.1	15.7	123.3	257.7
	4	25-May	232.3	1.2	0.0	212.2	10.2
		24-Jun	364.7	26.2	0.0	272.3	47.3
		17-Jul	837.2	71.7	13.0	320.0	380.7
		18-Aug	1280.5	454.1	54.9	346.5	397.2
		11-Sep	604.8	134.4	53.1	250.6	160.2
		13-Oct	532.1	75.1	17.6	189.8	248.7
Takla							
1997	1	26-May	48.5	1.3	0.4	33.9	6.9
		17-Jun	498.4	13.4	0.0	214.8	244.2
		19-Jul	709.9	115.0	38.7	133.5	343.6
		17-Aug	420.5	53.9	3.9	104.8	242.2
		10-Sep	457.1	74.8	9.0	104.8	246.9
		7-Oct	234.6	26.1	24.0	78.4	104.0
	2	26-May	87.5	2.3	6.6	48.0	21.5
		17-Jun	506.6	22.5	8.5	329.2	102.4
		19-Jul	815.8	118.8	25.9	198.7	444.9
		17-Aug	557.4	181.7	26.2	126.2	188.6
		10-Sep	300.4	42.7	38.5	116.4	96.1
		7-Oct	209.2	12.8	13.8	100.3	82.1
	3	27-May	128.8	6.7	1.0	99.8	15.8
		18-Jun	555.9	26.2	21.4	395.7	85.4
		20-Jul	772.5	85.0	46.8	201.7	406.4
		18-Aug	673.8	247.9	27.7	177.1	203.6
		9-Sep	703.7	138.1	23.5	202.9	323.0
		8-Oct	433.9	64.7	15.6	239.3	114.0

Table 8 (Cont.). Variation in biomass of the most common zooplankton in the lake. Data were collected by 30-m vertical hauls, using a Wisconsin net, for each station in Takla, Trembleur, and Stuart lakes.

Lake and year	Station	Date	Zooplankton biomass (mg dry wt./m²)				
			Macrozooplankton (>250 µm)	*Daphnia*	Bosminidae	Cyclopidae	Diaptomidae
	4	27-May	76.2	0.5	0.5	54.9	11.7
		18-Jun	184.8	6.2	0.0	121.5	41.9
		20-Jul	395.3	72.9	27.6	149.8	131.7
		18-Aug	745.6	350.0	124.4	181.9	71.3
		9-Sep	281.0	75.1	23.7	104.1	74.2
		8-Oct	337.5	52.1	35.6	143.4	104.4
Takla							
1998	1	24-May	650.2	12.3	4.8	519.2	89.3
		17-Jun	720.0	59.3	51.3	318.4	203.5
		20-Jul	571.2	70.7	36.7	148.3	259.7
		12-Aug	879.2	356.4	42.9	200.0	261.3
		19-Sep	365.1	69.8	25.5	135.2	128.0
		7-Oct	413.6	48.8	41.6	125.6	194.3
	2	24-May	116.8	3.5	0.4	90.5	17.9
		17-Jun	348.5	15.5	5.7	192.0	114.7
		20-Jul	640.6	105.6	20.3	184.1	259.2
		12-Aug	859.7	364.0	49.0	151.9	253.0
		19-Sep	424.2	123.3	35.6	184.6	79.8
		7-Oct	142.6	13.4	15.4	82.5	31.3
	3	25-May	223.7	6.8	2.3	180.1	30.1
		18-Jun	726.2	33.5	28.3	419.1	221.8
		21-Jul	750.4	167.5	14.6	324.0	199.0
		13-Aug	901.6	253.5	61.9	419.2	156.6
		18-Sep	696.3	89.3	46.2	257.0	302.4
		8-Oct	367.1	26.8	29.6	191.6	117.9
	4	25-May	185.3	2.0	2.0	106.0	59.7
		18-Jun	310.0	2.6	19.6	176.5	97.5
		21-Jul	430.5	156.7	87.8	164.5	17.3
		13-Aug	1054.0	301.3	446.1	241.3	31.6
		18-Sep	597.9	181.6	157.0	217.0	34.1
		8-Oct	238.1	72.6	49.6	90.3	25.1
Trembleur							
1996	1	23-May	887.3	11.4	4.7	461.9	405.6
		19-Jun	1348.5	9.9	23.3	961.9	328.3
		22-Jul	1790.6	170.8	245.8	419.1	934.3
		13-Aug	1685.4	402.2	151.5	356.0	760.6
		13-Sep	1325.0	343.8	130.7	245.4	597.6
		8-Oct	730.3	64.9	10.7	190.7	462.1
	2	23-May	562.8	7.6	9.0	217.2	316.1
		19-Jun	925.4	45.5	50.9	581.5	177.2
		22-Jul	1632.4	639.1	205.8	440.3	260.4
		13-Aug	1823.9	776.8	158.3	257.6	598.4

Table 8 (Cont.). Variation in biomass of the most common zooplankton in the lake. Data were collected by 30-m vertical hauls, using a Wisconsin net, for each station in Takla, Trembleur, and Stuart lakes.

Lake and year	Station	Date	Zooplankton biomass (mg dry wt./m²)				
			Macrozooplankton (>250 µm)	*Daphnia*	Bosminidae	Cyclopidae	Diaptomidae
		13-Sep	908.1	184.7	20.7	239.8	455.2
		8-Oct	1104.8	199.9	67.2	234.5	598.1
Trembleur							
1997	1	24-May	500.0	14.4	1.1	253.4	229.8
		22-Jun	1048.9	45.4	12.1	643.5	290.0
		15-Jul	2426.2	184.8	46.4	1055.1	1077.1
		12-Aug	1377.2	464.6	48.6	426.0	402.8
		14-Sep	824.8	49.6	85.3	276.7	406.7
	2	24-May	256.3	7.6	4.8	109.6	127.6
		22-Jun	590.3	21.7	10.2	378.5	160.7
		15-Jul	1613.4	653.1	15.8	461.5	374.7
		12-Aug	659.6	226.1	8.4	237.0	107.5
Trembleur							
1998	1	21-May	241.3	5.6	7.1	149.1	72.1
		16-Jun	1213.6	89.2	127.7	829.9	161.9
		17-Jul	1636.9	425.8	109.6	520.7	524.8
		11-Aug	1328.7	171.7	50.4	639.4	446.5
		15-Sep	647.8	37.1	89.5	222.2	281.9
		6-Oct	990.7	17.2	34.3	339.0	567.6
	2	21-May	928.5	31.2	2.2	598.8	248.2
		16-Jun	1243.6	298.1	98.0	531.5	238.5
		11-Aug	1164.2	381.7	46.2	438.8	245.8
		15-Sep	422.9	53.3	62.4	158.9	130.8
		6-Oct	410.5	31.9	63.6	65.0	242.4
Stuart							
1996	1	24-May	829.4	5.8	0.0	761.4	37.1
		20-Jun	1599.6	43.7	123.6	839.0	386.5
		19-Jul	1110.2	22.1	85.9	280.0	475.4
		14-Aug	930.6	24.5	75.4	261.1	431.0
		14-Sep	1236.6	75.9	43.9	450.4	595.1
		9-Oct	1114.5	8.7	64.3	843.2	160.3
	2	24-May	929.4	21.2	11.8	693.9	62.1
		20-Jun	875.8	10.7	27.7	355.5	395.1
		19-Jul	3835.4	157.3	535.4	371.4	2717.9
		14-Aug	1562.3	31.5	146.4	315.9	1011.7
		14-Sep	917.2	88.6	30.5	199.9	575.0
		9-Oct	883.1	62.1	7.4	339.9	472.4
	3	21-Jun	1188.5	60.6	61.7	648.8	321.7
		21-Jul	1140.6	46.9	36.8	337.8	700.6
		15-Aug	883.9	83.8	28.3	210.5	522.8
		15-Sep	1990.8	173.2	20.2	360.4	1425.5

Table 8 (Cont.). Variation in biomass of the most common zooplankton in the lake. Data were collected by 30-m vertical hauls, using a Wisconsin net, for each station in Takla, Trembleur, and Stuart lakes.

Lake and year	Station	Date	Zooplankton biomass (mg dry wt./m²)				
			Macrozooplankton (>250 µm)	*Daphnia*	Bosminidae	Cyclopidae	Diaptomidae
		10-Oct	1749.6	199.7	8.8	385.6	1150.1
	4	27-May	681.4	0.4	0.0	623.7	9.7
		21-Jun	1452.5	70.1	47.6	606.2	524.5
		21-Jul	2080.7	139.2	222.0	453.3	1065.7
		15-Aug	1151.1	79.6	51.5	374.2	594.8
		15-Sep	945.4	28.3	0.0	290.9	624.3
		10-Oct	1762.5	69.6	10.5	520.2	1153.5
Stuart							
1997	1	22-May	532.0	8.6	0.0	437.3	35.7
		21-Jun	1156.5	30.7	13.3	560.2	295.1
		16-Jul	1487.5	11.4	33.8	505.8	772.5
		13-Aug	1079.3	18.5	18.5	372.6	542.3
		12-Sep	774.1	18.9	121.3	352.1	193.6
	2	22-May	423.1	17.9	1.6	301.8	8.7
		21-Jun	1577.3	19.8	4.9	606.6	803.7
		16-Jul	1270.4	20.7	11.4	392.7	804.9
		13-Aug	1980.4	87.3	68.4	232.2	1528.0
		12-Sep	1329.7	11.2	0.0	213.9	524.8
	3	23-May	251.1	11.0	0.0	167.1	11.6
		20-Jun	1527.0	14.4	2.1	676.6	486.3
		17-Jul	1189.7	3.7	2.0	226.5	816.8
		15-Aug	1514.6	94.3	41.3	391.0	984.9
		13-Sep	1047.9	214.7	10.3	171.2	645.2
	4	23-May	869.9	29.6	0.0	746.5	28.4
		20-Jun	2091.6	706.1	1.6	401.0	793.4
		17-Jul	1170.6	15.8	4.8	336.7	687.9
		15-Aug	2161.1	735.4	29.7	291.1	1057.4
		13-Sep	739.1	37.3	11.8	158.7	520.0
Stuart							
1998	1	22-May	501.6	5.9	8.3	391.2	80.2
		20-Jun	1252.2	79.7	71.5	451.2	523.8
		18-Jul	1297.4	59.0	178.0	570.0	357.1
		15-Aug	1116.4	96.2	26.4	446.2	419.1
		16-Sep	988.4	39.2	36.5	545.7	354.2
		10-Oct	1360.3	11.9	55.0	992.4	253.7
	2	22-May	552.9	12.6	6.5	389.9	75.0
		20-Jun	1557.9	30.1	53.4	614.2	570.3
		18-Jul	1890.5	67.4	55.4	401.1	1066.8
		15-Aug	1705.5	10.5	2.6	322.2	732.1
		16-Sep	733.0	82.7	16.2	357.9	258.5
		10-Oct	1056.3	70.1	120.4	683.9	152.8

Table 8 (Cont.). Variation in biomass of the most common macrozooplankton (>250 mm) in the lake. Data were collected by 30-m vertical hauls, using a Wisconsin net, for each station in Takla, Trembleur, and Stuart lakes.

Lake and year	Station	Date	Zooplankton biomass (mg dry wt./m²)				
			Macrozooplankton (>250 µm)	*Daphnia*	Bosminidae	Cyclopidae	Diaptomidae
	3	23-May	1184.7	54.4	60.1	435.7	525.0
		19-Jun	1665.9	42.3	275.7	607.7	484.0
		19-Jul	1611.0	115.1	37.6	254.3	547.9
		16-Aug	2126.1	132.9	36.5	699.4	1147.4
		17-Sep	698.8	86.1	35.4	294.8	112.3
		11-Oct	1098.9	153.7	150.6	686.8	95.8
	4	23-May	1399.9	9.8	37.8	1175.0	113.9
		19-Jun	1266.3	133.4	286.3	351.2	235.1
		19-Jul	1984.3	428.9	146.1	570.6	714.8
		16-Aug	1252.1	243.6	80.0	442.6	366.0
		17-Sep	1548.6	208.1	61.6	940.2	303.2
		11-Oct	1236.4	36.7	175.4	916.6	101.9

Table 9. Seasonal (May - October) averages of physical data for each station in Takla, Trembleur, and Stuart lakes.

Lake	Station	Year	Surface temp. (°C)	Mean epilimnetic temp. (°C)	Epilimnion depth (m)	Secchi depth (m)	Euphotic zone depth (m)	Extinction coefficient (/m)
Takla								
	1	1996	10.5	10.2	14.8	4.7	6.7	0.61
		1997	12.8	11.7	8.7	3.8	5.9	0.70
		1998	13.3	12.9	10.0	4.7	6.8	0.57
	2	1996	11.5	11.1	11.8	5.0	7.2	0.56
		1997	13.2	11.9	9.0	4.3	6.7	0.64
		1998	13.7	12.6	8.9	5.0	7.3	0.53
	3	1996	9.7	9.4	14.8	5.8	7.8	0.52
		1997	12.4	11.7	9.3	4.3	6.6	0.61
		1998	12.6	11.7	9.4	5.3	7.4	0.54
	4	1996	10.8	10.3	13.5	5.0	7.4	0.53
		1997	12.7	12.2	9.6	4.2	6.5	0.66
		1998	13.5	12.9	11.1	5.2	7.3	0.54
Trembleur								
	1	1996	10.8	10.5	18.1	3.9	6.3	0.66
		1997	12.6	12.1	17.2	3.6	5.6	0.71
		1998	14.5	13.7	15.4	4.0	6.4	0.63
	2	1996	11.2	11.2	22.0	4.3	6.1	0.67
		1997	12.6	12.2	16.8	2.8	4.8	0.83
		1998	14.0	13.4	10.7	4.1	6.7	0.59
Stuart								
	1	1996	12.0	11.7	12.7	4.4	7.3	0.54
		1997	13.1	12.7	9.8	3.6	6.1	0.68
		1998	14.0	12.9	11.1	4.4	6.5	0.58
	2	1996	12.8	12.4	14.5	4.1	6.8	0.59
		1997	13.8	13.5	14.3	3.2	5.7	0.78
		1998	15.4	14.6	8.0	4.6	6.4	0.62
	3	1996	13.4	13.3	15.3	4.8	7.2	0.55
		1997	13.6	13.5	16.1	3.2	5.3	0.79
		1998	15.2	14.7	12.3	4.4	7.3	0.52

Table 9 (Cont.). Seasonal (May - October) averages of physical data for each station in Takla, Trembleur, and Stuart lakes.

Lake	Station	Year	Surface temp. (°C)	Mean epilimnetic temp. (°C)	Epilimnion depth (m)	Secchi depth (m)	Euphotic zone depth (m)	Extinction coefficient (/m)
	4	1996	12.7	12.6	20.4	4.5	7.4	0.54
		1997	14.6	13.7	16.9	3.9	5.7	0.72
		1998	15.2	15.1	16.4	4.3	7.4	0.51

Table 10. Seasonal (May - October) averages of epilimnetic chemical data for each station in Takla, Trembleur, and Stuart lakes.

Lake	Station	Year	Conductivity (µS/cm @ 25°C)	pH	Total dissolved solids (mg/L)	Total alkalinity (mg $CaCO_3$/L)	Dissolved inorganic carbon (µg/L)	Silica (mg Si/L)	Nitrate (µg N/L)	Phosphorus (µg/L)	
										Total	Dissolved
Takla											
	1	1996	52	7.44	52	28.01	7356	2.27	52.8	4.2	.
		1997	57	7.39	50	24.56	7314	2.12	41.0	.	.
		1998	65	7.61	50	29.14	7346	2.09	42.9	5.9	4.6
	2	1996	53	7.46	52	27.73	7217	2.29	46.1	4.2	.
		1997	58	7.50	49	25.25	7358	2.11	42.7	.	.
		1998	66	7.61	52	29.39	7468	2.14	45.4	5.2	4.4
	3	1996	54	7.43	54	29.82	7824	2.34	58.3	4.1	.
		1997	61	7.52	53	26.65	7749	1.59	53.1	.	.
		1998	67	7.61	52	30.43	7746	2.26	54.2	6.4	4.9
	4	1996	54	7.48	56	29.43	7655	2.33	46.7	4.4	.
		1997	61	7.52	51	26.29	7642	1.84	50.4	.	.
		1998	68	7.63	50	30.12	7620	2.22	45.9	5.3	4.8
Trembleur											
	1	1996	62	7.55	62	36.43	9330	2.46	37.9	8.2	.
		1997	70	7.52	62	31.05	9049	2.15	40.6	.	.
		1998	77	7.69	61	36.45	9173	2.30	34.5	8.3	6.5
	2	1996	61	7.59	61	36.17	9234	2.36	31.5	7.6	.
		1997	68	7.62	61	31.19	8943	2.03	38.3	.	.
		1998	76	7.72	59	36.08	9094	2.27	24.3	8.3	5.7
Stuart											
	1	1996	76	7.68	67	45.54	11485	2.17	11.3	7.0	.
		1997	88	7.76	68	40.30	11425	1.53	17.3	.	.
		1998	90	7.84	71	44.43	11023	2.11	15.7	9.1	6.4
	2	1996	72	7.67	63	42.78	10814	2.31	16.9	7.7	.
		1997	84	7.73	74	38.52	10998	2.11	20.8	.	.
		1998	89	7.88	65	42.61	10542	2.08	11.1	8.1	6.1

Table 10 (Cont.). Seasonal (May - October) averages of epilimnetic chemical data for each station in Takla, Trembleur, and Stuart lakes.

Lake	Station	Year	Conductivity (µS/cm @ 25°C)	pH	Total dissolved solids (mg/L)	Total alkalinity (mg $CaCO_3$/L)	Dissolved inorganic carbon (µg/L)	Silica (mg Si/L)	Nitrate (µg N/L)	Phosphorus (µg/L)	
										Total	Dissolved
	3	1996	73	7.67	66	42.74	10801	2.21	21.1	7.0	.
		1997	83	7.81	68	37.58	10576	2.03	22.1	.	.
		1998	89	7.87	64	42.85	10602	2.04	8.2	8.0	5.6
	4	1996	74	7.73	67	43.76	10975	2.19	16.2	6.1	.
		1997	84	7.85	71	38.02	10669	2.27	13.8	.	.
		1998	91	7.93	66	43.08	10636	2.01	6.7	8.0	6.4

Table 11. Seasonal (May - October) average epilimnetic concentrations of particulate elements and molar ratios for each station in Takla, Trembleur, and Stuart lakes.

Lake	Station	Year	Particulate mass (µg/L)			Molar ratio		
			C	N	P	C/N	C/P	N/P
Takla								
	1	1996	315	30	2.3	12	351	28
		1997	233	27	2.5	10	243	24
		1998	193	22	2.1	10	239	23
	2	1996	302	26	1.9	14	407	30
		1997	220	25	2.5	10	231	23
		1998	179	19	1.8	11	255	23
	3	1996	304	30	2.0	12	393	33
		1997	177	22	2.2	9	206	22
		1998	192	20	1.8	11	279	25
	4	1996	310	28	2.1	13	386	30
		1997	212	23	2.0	11	270	25
		1998	212	22	1.9	11	282	25
Trembleur								
	1	1996	371	36	3.2	12	298	25
		1997	264	32	3.3	10	207	21
		1998	292	35	3.5	10	214	22
	2	1996	354	35	3.2	12	283	24
		1997	258	24	4.0	12	167	13
		1998	271	33	3.7	10	189	20
Stuart								
	1	1996	423	43	3.4	11	318	28
		1997	395	54	4.6	9	222	26
		1998	318	39	4.3	10	192	20
	2	1996	414	43	3.1	11	341	31
		1997	358	45	4.5	9	205	22
		1998	276	34	3.7	10	192	20
	3	1996	394	37	2.8	12	365	30
		1997	280	31	4.1	10	175	17
		1998	247	28	3.0	10	213	21
	4	1996	377	39	2.9	11	336	30
		1997	308	37	4.1	10	197	20
		1998	280	31	2.9	10	248	24

Table 12. Seasonal (May - October) averages of epilimnetic biological data for each station in Takla, Trembleur, and Stuart lakes.

Lake	Station	Year	Bacteria ($x10^6$/mL)	Total chlorophyll (µg/L)	Daily photosynthetic rate (mg C/m^2)	Phytoplankton (($no.x10^3$)/mL) Pico. (0.2-2 µm)	Nano. (2-20 µm)	Micro. (>20 µm)
Takla								
	1	1996	0.86	0.98	50.7	16.8	1.55	0.43
		1997	0.95	0.98	46.1	17.7	2.32	0.94
		1998	.	1.04	59.1	.	.	.
	2	1996	0.97	1.23	58.5	13.4	1.38	0.63
		1997	1.05	0.93	37.0	19.7	2.48	0.99
		1998	.	1.25	64.0	.	.	.
	3	1996	0.93	1.05	46.9	16.4	1.14	0.42
		1997	1.00	0.95	52.8	17.3	2.07	0.80
		1998	.	1.34	80.5	.	.	.
	4	1996	0.88	1.19	45.7	14.1	1.27	0.40
		1997	1.15	0.83	54.2	15.8	2.40	0.77
		1998	1.61	1.49	80.9	20.6	0.68	0.45
Trembleur								
	1	1996	0.94	1.45	74.2	17.7	1.05	0.38
		1997	1.29	1.24	79.0	13.0	1.86	0.98
		1998	1.70	1.36	117.7	29.2	1.69	0.73
	2	1996	0.90	1.25	73.6	16.8	1.50	0.45
		1997	1.43	1.39	62.2	12.0	2.80	1.53
		1998	.	1.66	99.3	.	.	.
Stuart								
	1	1996	0.96	2.51	144.3	54.0	3.17	0.69
		1997	1.78	2.56	191.0	64.0	2.32	1.78
		1998	.	2.52	191.0	.	.	.
	2	1996	1.07	2.65	117.3	37.1	3.92	0.75
		1997	1.79	1.94	147.2	35.8	3.57	1.66
		1998	.	2.21	147.5	.	.	.

Table 12 (Cont.). Seasonal (May - October) averages of epilimnetic biological data for each station in Takla, Trembleur, and Stuart lakes.

Lake	Station	Year	Bacteria ($x10^6$/mL)	Total chlorophyll (µg/L)	Daily photosynthetic rate (mg C/m^2)	Phytoplankton (($no.x10^3$)/mL) Pico. (0.2-2 µm)	Nano. (2-20 µm)	Micro. (>20 µm)
Takla								
	3	1996	1.15	1.63	122.2	50.2	3.02	0.47
		1997	1.75	1.58	125.7	30.6	2.59	1.59
		1998	.	1.90	129.8	.	.	.
	4	1996	1.08	1.71	131.7	29.8	2.49	0.50
		1997	1.97	1.67	123.2	29.8	3.46	1.39
		1998	1.88	2.25	146.1	33.2	1.94	0.84

Table 13. Seasonal (May - October) averages of epilimnetic biological data for each station in Takla, Trembleur, and Stuart lakes.

Lake	Station	Year	Chlorophyll (µg/L)			Daily photosynthetic rate (mg C/m^2)		
			Pico. (<=2 µm)	Nano. (2-20 µm)	Micro. (>20 µm)	Pico. (0.2-2 µm)	Nano. (2-20 µm)	Micro. (>20 µm)
Takla								
	4	1996	0.59	0.51	0.09	20	21	5
		1997	0.38	0.35	0.10	21	24	9
Trembleur								
	1	1996	0.61	0.52	0.31	29	38	8
		1997	0.60	0.39	0.25	23	40	16
Stuart								
	4	1996	0.80	0.57	0.34	50	55	24
		1997	0.82	0.59	0.26	41	55	27

Table 14. Seasonal (May - October) average density of the most common macrozooplankton (>250 mm) in the lake. Data were collected by 30-m vertical hauls, using a Wisconsin net, for each station in Takla, Trembleur, and Stuart lakes.

			Density ((no. x 10^3)/m^2)				
Lake	Station	Year	Macrozooplankton	*Daphnia*	Bosminidae	Cyclopidae	Diaptomidae
Takla							
	1	1996	135.2	7.3	10.0	68.8	41.8
		1997	168.8	7.1	4.3	66.2	75.6
		1998	206.2	18.1	12.3	93.0	65.6
	2	1996	171.7	4.3	15.0	94.6	53.0
		1997	203.8	11.2	7.7	87.2	71.4
		1998	158.5	17.6	8.7	69.0	54.8
	3	1996	234.2	8.9	6.8	149.2	53.2
		1997	209.6	15.0	9.4	113.3	56.1
		1998	228.0	16.6	10.2	130.2	58.2
	4	1996	192.9	18.4	7.4	103.9	49.6
		1997	124.1	14.5	12.9	63.9	22.2
		1998	168.1	20.9	47.6	71.5	18.1
Trembleur							
	1	1996	448.4	22.3	32.0	212.7	158.7
		1997	500.7	24.3	10.8	249.5	177.2
		1998	347.4	18.5	23.0	188.9	110.9
	2	1996	362.1	43.3	28.7	144.9	98.3
		1997	309.2	36.7	4.0	161.6	87.4
		1998	323.1	32.2	18.0	168.4	70.6
Stuart							
	1	1996	307.8	4.0	18.7	202.2	62.7
		1997	307.0	2.8	8.4	182.1	85.8
		1998	337.2	7.5	17.7	236.2	65.1
	2	1996	326.7	7.3	36.7	121.0	128.2
		1997	325.1	5.7	5.5	142.9	134.2
		1998	309.1	5.6	8.7	192.0	86.8
	3	1996	263.4	13.4	8.0	134.0	104.3
		1997	297.9	7.9	3.8	139.3	122.5
		1998	368.0	12.0	23.8	204.2	110.1
	4	1996	322.7	8.7	15.1	168.1	114.2
		1997	382.2	47.9	3.6	138.4	160.3
		1998	430.3	29.1	36.3	280.8	62.8

Table 15. Seasonal (May - October) average biomass of the most common macrozooplankton (>250 mm) in the lake. Data were collected by 30-m vertical hauls, using a Wisconsin net, for each station in Takla, Trembleur, and Stuart lakes.

			Biomass (mg dry wt./m²)				
Lake	Station	Year	Macrozooplankton	*Daphnia*	Bosminidae	Cyclopidae	Diaptomidae
Takla							
	1	1996	572.1	56.3	32.2	202.9	265.3
		1997	459.8	56.5	13.7	125.0	233.3
		1998	625.6	125.6	36.3	224.1	201.8
	2	1996	572.7	31.1	51.8	251.2	227.3
		1997	483.4	77.1	22.0	172.7	187.5
		1998	504.8	133.2	24.7	163.6	154.2
	3	1996	762.7	62.6	25.1	398.8	260.8
		1997	607.5	105.6	26.5	232.0	223.6
		1998	692.4	117.4	34.2	328.4	195.0
	4	1996	691.3	144.4	26.0	276.3	223.1
		1997	365.4	104.4	38.3	133.0	78.4
		1998	539.2	141.1	155.1	183.9	45.0
Trembleur							
	1	1996	1395.4	190.2	111.1	473.2	606.4
		1997	1345.1	186.6	39.0	574.1	507.4
		1998	1101.1	151.5	81.0	501.0	344.1
	2	1996	1216.1	342.8	93.6	354.8	382.8
		1997	868.0	256.2	10.7	331.5	213.6
		1998	957.8	230.6	62.0	396.2	220.3
Stuart							
	1	1996	1171.0	35.1	72.5	522.2	401.1
		1997	1080.7	18.6	32.0	455.4	422.6
		1998	1111.9	57.7	68.2	532.4	366.1
	2	1996	1621.7	65.7	150.6	350.6	996.3
		1997	1422.7	35.9	21.6	367.7	847.3
		1998	1345.5	45.4	36.5	441.7	555.0
	3	1996	1365.4	107.1	30.7	358.8	838.0
		1997	1220.7	57.5	12.9	363.8	657.7
		1998	1466.2	95.9	96.8	482.6	535.3
	4	1996	1370.7	71.0	66.1	456.3	679.5
		1997	1556.3	372.9	10.7	368.6	705.1
		1998	1477.2	212.4	135.7	659.7	352.2

Table 16. Whole-lake seasonal average of physical data for Takla, Trembleur, and Stuart lakes.

Lake	Year	Surface temp. (°C)	Mean epilimnetic temp. (°C)	Epilimnion depth (m)	Secchi depth (m)	Euphotic zone depth (m)	Extinction coefficient (/m)
Takla							
	1996	10.7	10.4	13.6	5.0	7.2	0.57
	1997	12.8	11.9	9.1	4.1	6.4	0.66
	1998	13.3	12.6	9.7	5.0	7.2	0.55
	Mean	12.3	11.6	10.8	4.7	6.9	0.59
Trembleur							
	1996	11.0	10.9	20.2	4.2	6.2	0.67
	1997	12.6	12.2	17.0	3.2	5.1	0.77
	1998	14.2	13.5	12.9	4.0	6.6	0.61
	Mean	12.6	12.2	16.7	3.8	6.0	0.68
Stuart							
	1996	12.8	12.6	17.4	4.4	7.2	0.55
	1997	14.1	13.5	15.4	3.6	5.7	0.74
	1998	15.1	14.7	13.3	4.4	7.0	0.54
	Mean	14.0	13.6	15.4	4.1	6.6	0.61

Table 17. Whole-lake seasonal average of epilimnetic chemical data for Takla, Trembleur, and Stuart lakes.

Lake	Year	Conductivity (µS/cm @ 25°C)	pH	Total dissolved solids (mg/L)	Total alkalinity (mg $CaCO_3$/L)	Dissolved inorganic carbon (µg/L)	Silica (mg Si/L)	Nitrate (µg N/L)	Phosphorus (µg/L)	
									Total	Dissolved
Takla										
	1996	53	7.45	53	28.48	7445	2.30	50.5	4.2	.
	1997	59	7.47	50	25.45	7462	1.97	45.3	.	.
	1998	66	7.61	51	29.62	7504	2.16	46.2	5.6	4.6
	mean	59	7.51	51	27.85	7470	2.14	47.3	4.9	4.6
Trembleur										
	1996	61	7.57	61	36.29	9277	2.40	34.4	7.9	.
	1997	69	7.57	62	31.13	8991	2.1	39.3	.	.
	1998	76	7.71	60	36.24	9130	2.28	28.9	8.3	6.1
	mean	69	7.62	61	34.55	9133	2.26	34.2	8.1	6.1
Stuart										
	1996	74	7.70	66	43.55	10962	2.22	16.7	6.7	.
	1997	84	7.81	71	38.29	10803	2.11	17.2	.	.
	1998	90	7.90	66	43.08	10650	2.04	8.9	8.1	6.2
	mean	83	7.80	68	41.64	10805	2.12	14.3	7.4	6.2

Table 18. Whole-lake seasonal average of epilimnetic particulate elements and molar ratios for Takla, Trembleur, and Stuart lakes.

Lake	Year	Particulate mass (µg/L)			Molar ratio		
		C	N	P	C/N	C/P	N/P
Takla							
	1996	308	28	2.1	13	383	30
	1997	215	25	2.3	10	237	23
	1998	191	21	1.9	11	259	24
	mean	238	24	2.1	11	293	26
Trembleur							
	1996	362	35	3.2	12	290	24
	1997	261	28	3.7	11	185	17
	1998	281	34	3.6	10	200	21
	mean	301	32	3.5	11	225	21
Stuart							
	1996	393	40	3.0	11	341	30
	1997	323	39	4.3	10	197	21
	1998	277	32	3.3	10	224	22
	mean	331	37	3.5	10	254	24

Table 19. Whole-lake seasonal average of epilimnetic biological data for Takla, Trembleur, and Stuart lakes.

Lake	Year	Bacteria ($x10^6$/mL)	Total chlorophyll (µg/L)	Daily photosynthetic rate (mg C/m^2)	Phytoplankton (($no.x10^3$)/mL) Pico. (0.2-2 µm)	Nano. (2-20 µm)	Micro. (>20 µm)
Takla							
	1996	0.91	1.11	52	15.2	1.37	0.49
	1997	1.02	0.93	46	18.0	2.34	0.90
	1998		1.24	68			
	mean	0.97	1.09	55	16.6	1.86	0.70
Trembleur							
	1996	0.92	1.34	74	17.2	1.30	0.42
	1997	1.36	1.32	70	12.5	2.38	1.28
	1998		1.52	108			
	mean	1.14	1.39	84	14.9	1.84	0.85
Stuart							
	1996	1.08	1.99	128	37.6	2.97	0.57
	1997	1.87	1.80	136	34.8	3.20	1.53
	1998		2.21	148			
	mean	1.48	2.00	137	36.2	3.09	1.05

Table 20. Whole-lake seasonal average of epilimnetic biological data for Takla, Trembleur, and Stuart lakes.

Lake	Year	Chlorophyll (µg/L)			Daily photosynthetic rate (mg C/m^2)		
		Pico. (<=2 µm)	Nano. (2-20 µm)	Micro. (>20 µm)	Pico. (0.2-2 µm)	Nano. (2-20 µm)	Micro. (>20 µm)
Takla							
	1996	0.59	0.51	0.09	20	21	5
	1997	0.38	0.35	0.10	21	24	9
	1998						
	mean	± 0.48	± 0.43	± 0.10	± 21	± 23	± 7
Trembleur							
	1996	0.62	0.52	0.31	29	38	8
	1997	0.60	0.40	0.25	23	40	16
	1998						
	mean	± 0.61	± 0.46	± 0.28	± 26	± 39	± 12
Stuart							
	1996	0.80	0.57	0.34	50	55	24
	1997	0.82	0.59	0.26	41	55	27
	1998						
	mean	± 0.81	± 0.58	± 0.30	± 45	± 55	± 26

Table 21. Whole-lake seasonal average density of the most common macrozooplankton (>250 mm) in the lake. Data were collected by 30-m vertical hauls, using a Wisconsin net, for Takla, Trembleur, and Stuart lakes.

Lake	Year	Density ((no. x 10^3)/m^2)				
		Macrozooplankton	*Daphnia*	Bosminidae	Cyclopidae	Diaptomidae
Takla						
	1996	174.5	8.5	10.6	97.4	48.8
	1997	179.6	11.1	7.8	80.9	61.5
	1998	187.9	18.1	16.9	88.0	52.6
	mean	180.7	12.6	11.8	88.8	54.3
Trembleur						
	1996	401.0	33.8	30.2	175.5	125.6
	1997	395.6	31.1	7.1	201.2	127.9
	1998	334.0	26.0	20.3	177.7	88.7
	mean	376.9	30.3	19.2	184.8	114.1
Stuart						
	1996	311.3	8.7	18.9	155.2	110.1
	1997	346.6	26.8	4.6	144.1	140.0
	1998	382.8	18.6	26.1	242.9	76.8
	mean	346.9	18.0	16.5	180.7	109.0

Table 22. Whole-lake seasonal average biomass of the most common macrozooplankton (>250 mm) in the lake. Data were collected by 30-m vertical hauls, using a Wisconsin net, for Takla, Trembleur, and Stuart lakes.

Lake	Year	Biomass (mg dry wt./m²)				
		Macrozooplankton	*Daphnia*	Bosminidae	Cyclopidae	Diaptomidae
Takla						
	1996	626	64	36	266	245
	1997	477	80	23	161	190
	1998	583	129	53	216	158
	mean	562	91	37	214	198
Trembleur						
	1996	1297	274	102	408	484
	1997	1083	225	23	441	346
	1998	1022	195	71	443	276
	mean	1134	231	65	431	369
Stuart						
	1996	1404	73	79	423	748
	1997	1417	205	16	377	698
	1998	1408	139	100	567	431
	Mean	1410	139	65	455	626

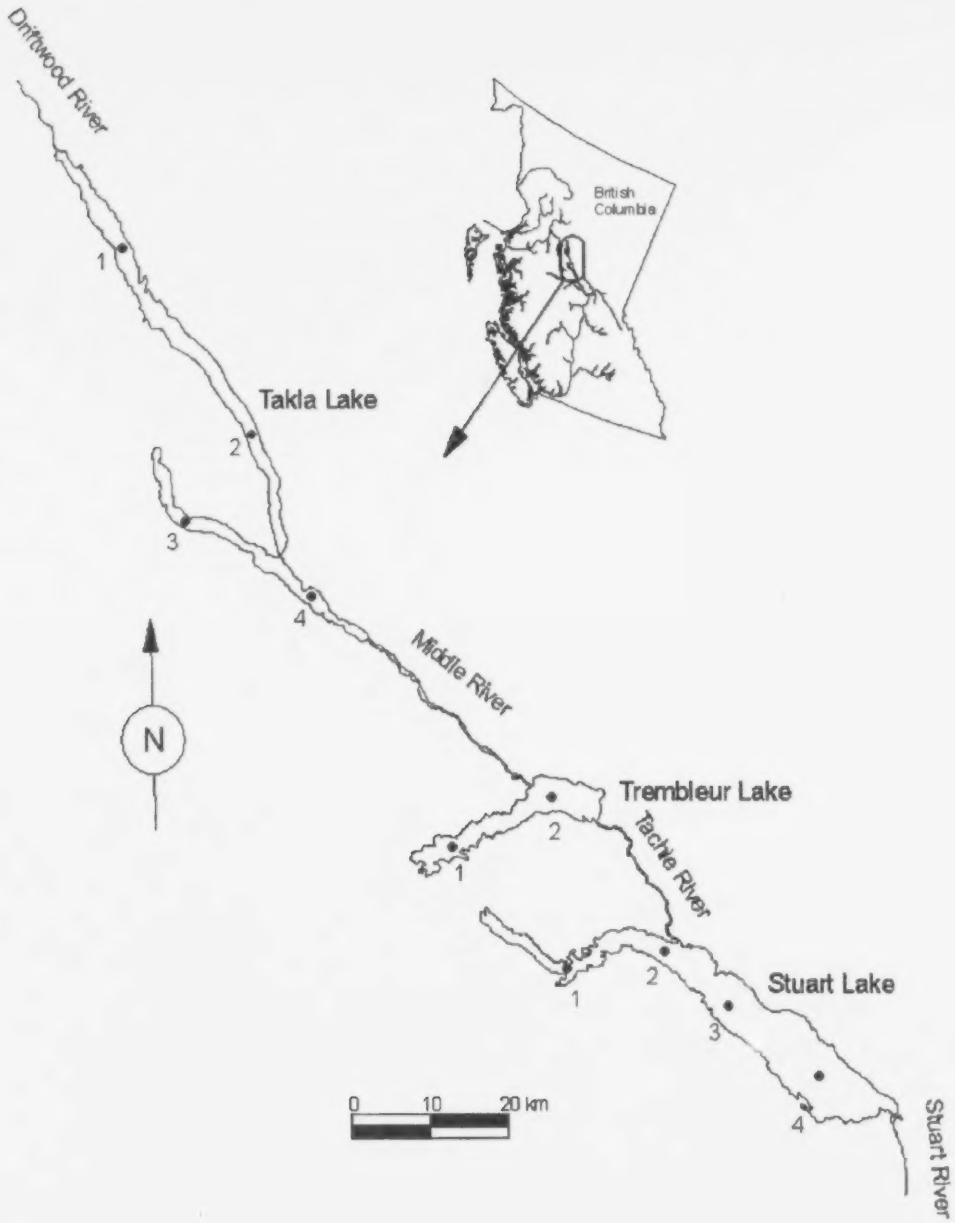

Fig. 1. Map of British Columbia, Stuart system lakes, and sampling locations.

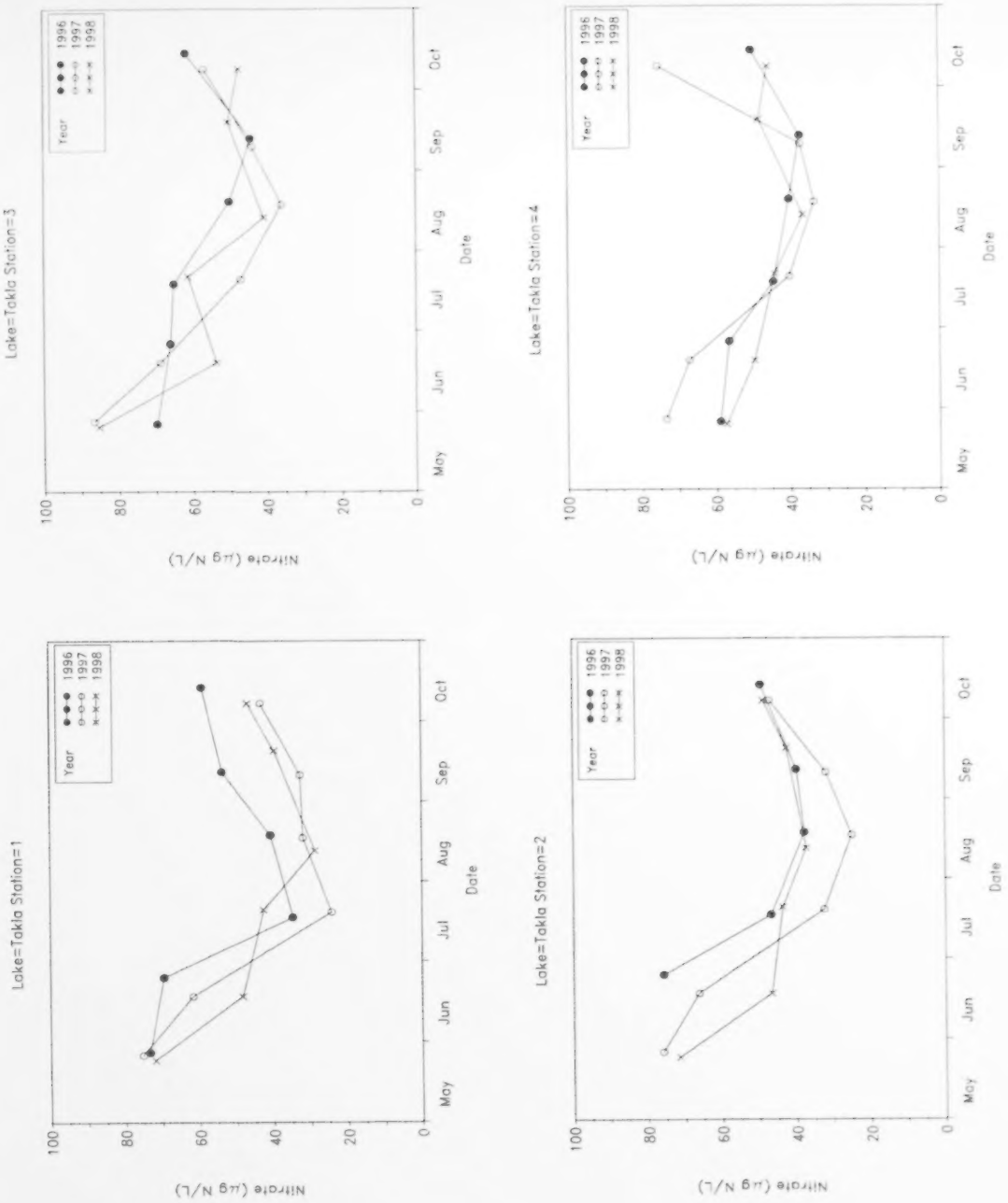

Fig. 2. Seasonal variation in mean epilimnetic nitrate for each station in Takla Lake.

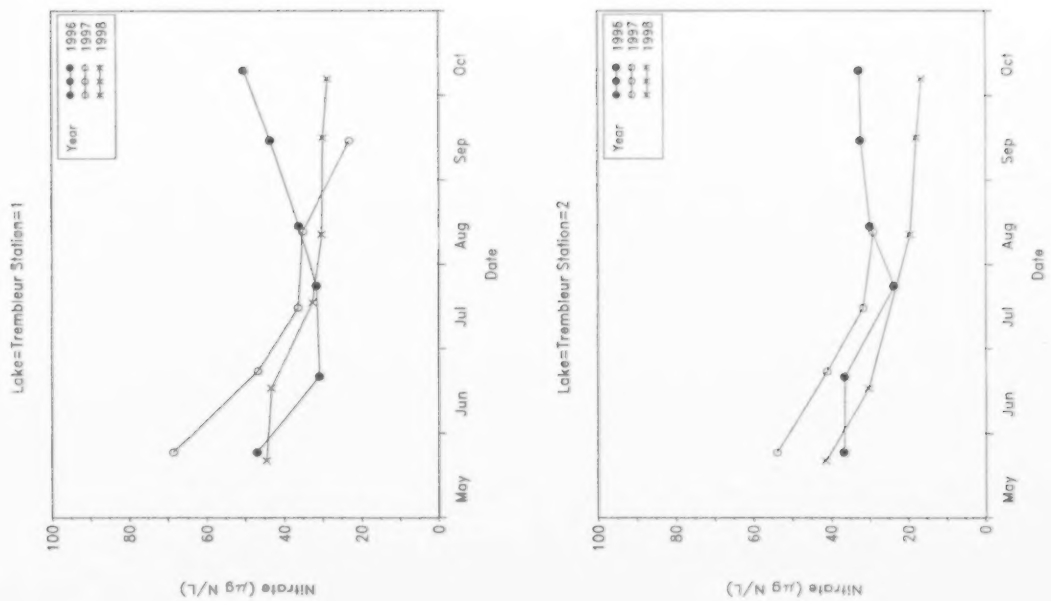

Fig. 3. Seasonal variation in mean epilimnetic nitrate for each station in Trembleur Lake.

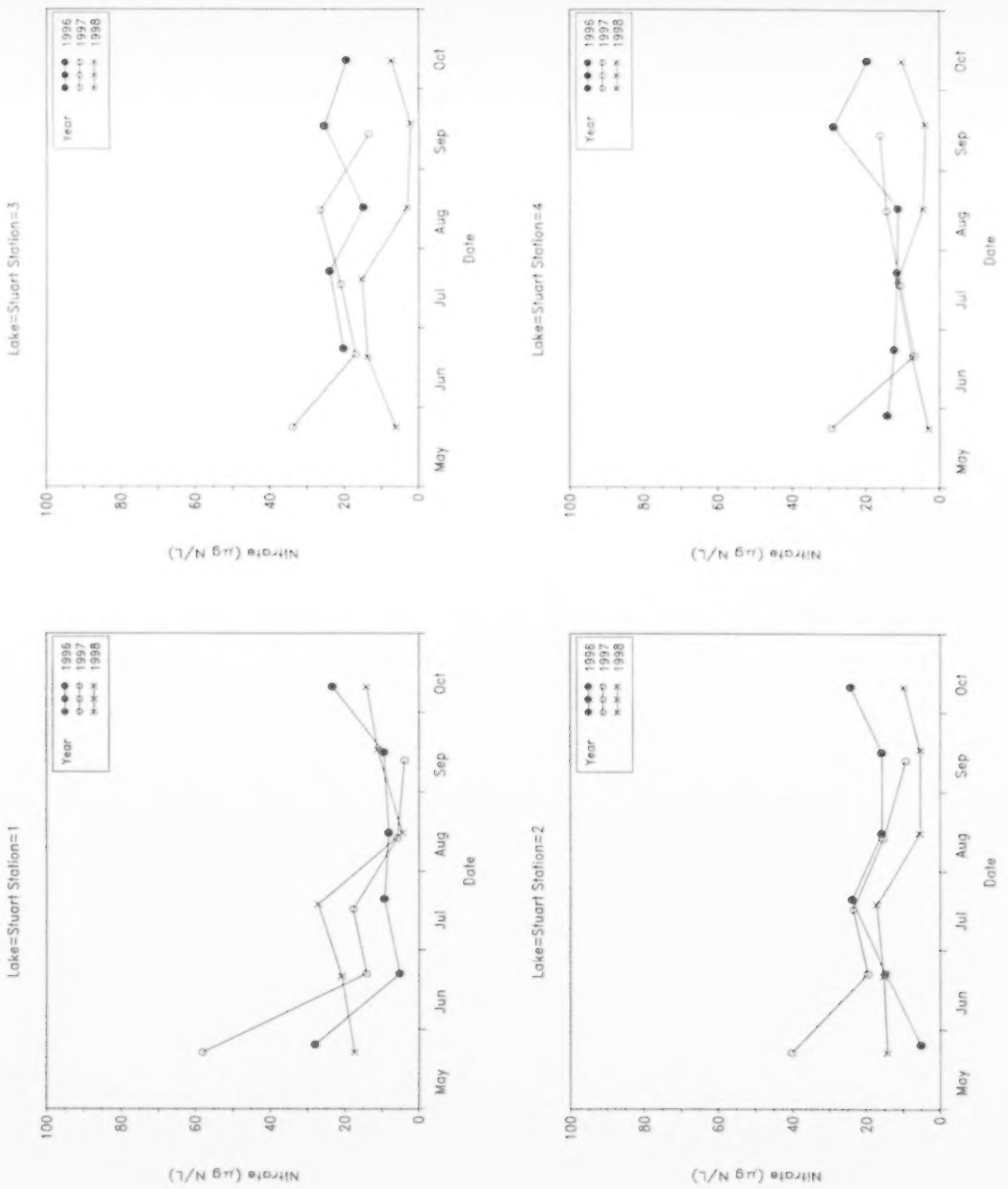

Fig. 4. Seasonal variation in mean epilimnetic nitrate for each station in Stuart Lake.

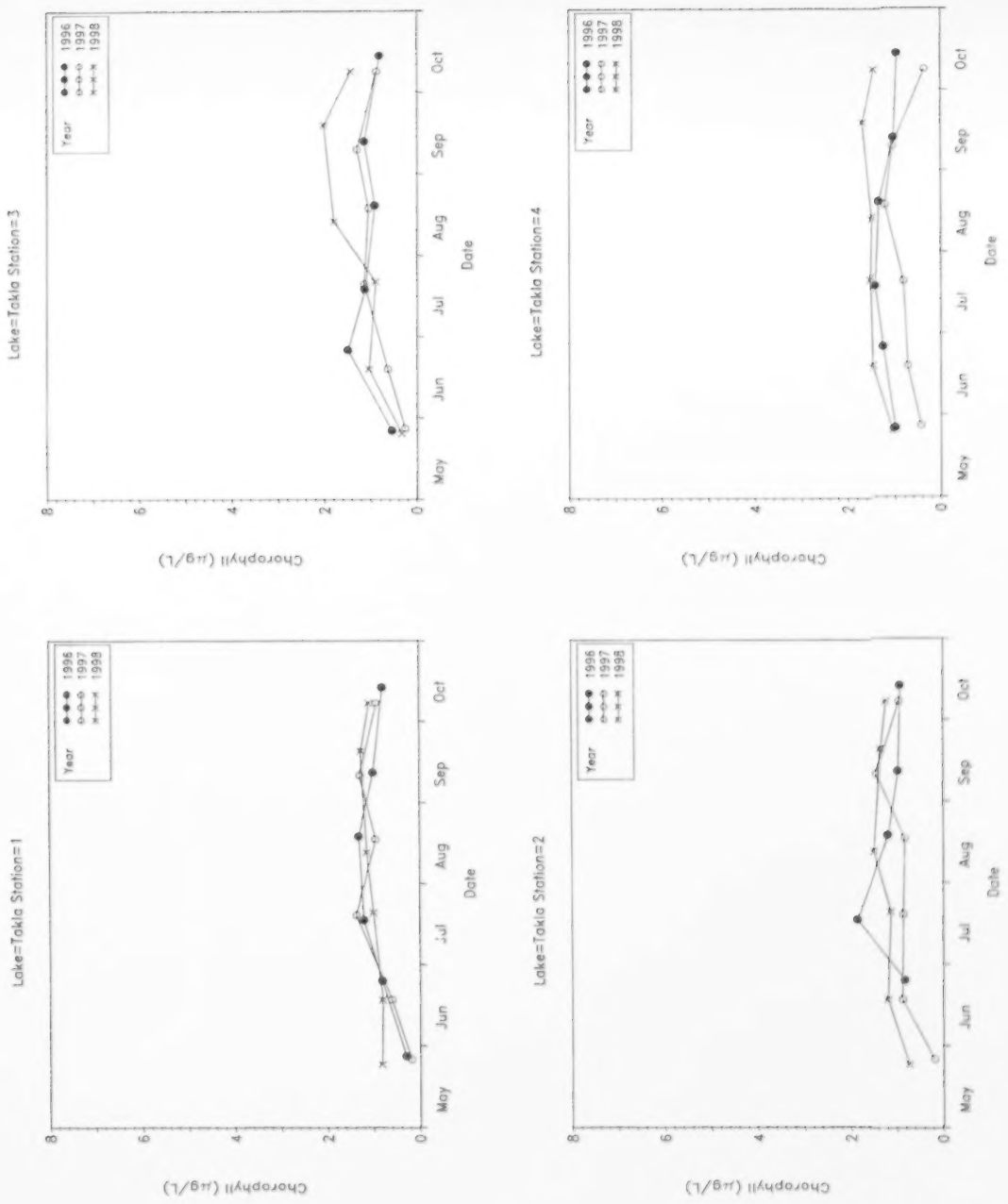

Fig. 5. Seasonal variation in mean epilimnetic chlorophyll for each station in Takla Lake.

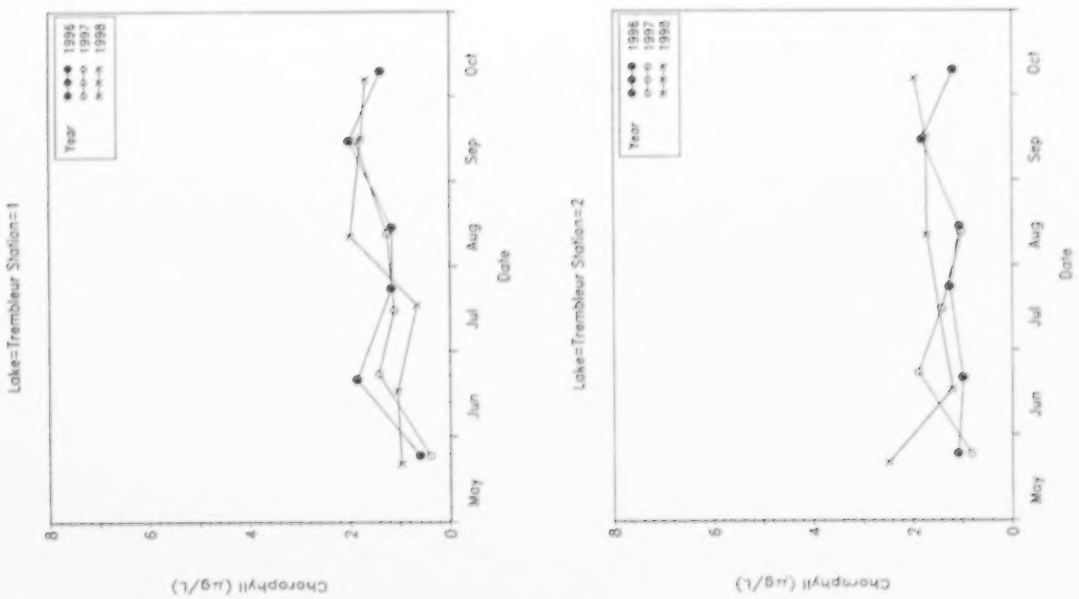

Fig. 6. Seasonal variation in mean epilimnetic chlorophyll for each station in Trembleur Lake.

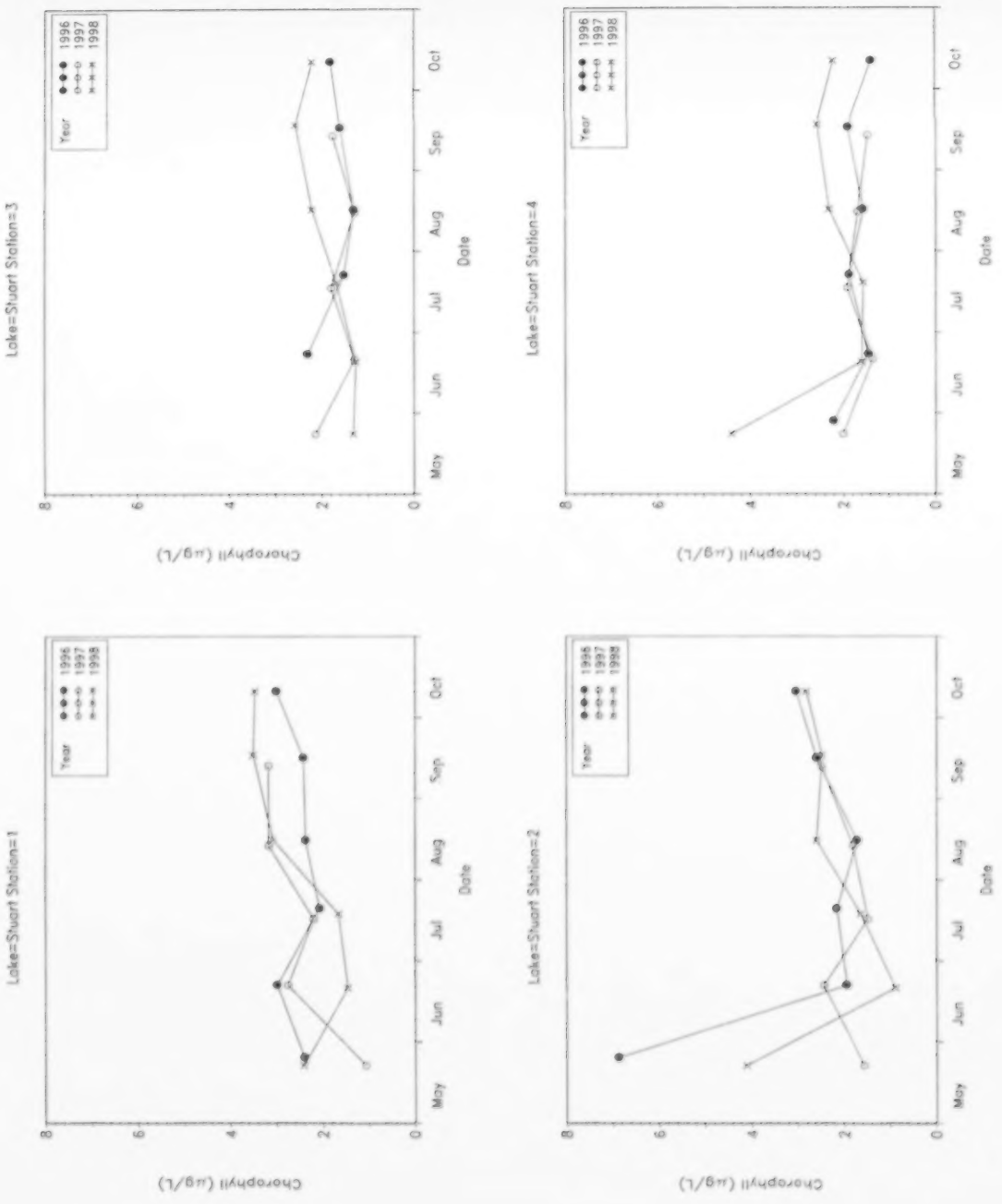

Fig. 7. Seasonal variation in mean epilimnetic chlorophyll for each station in Stuart Lake.

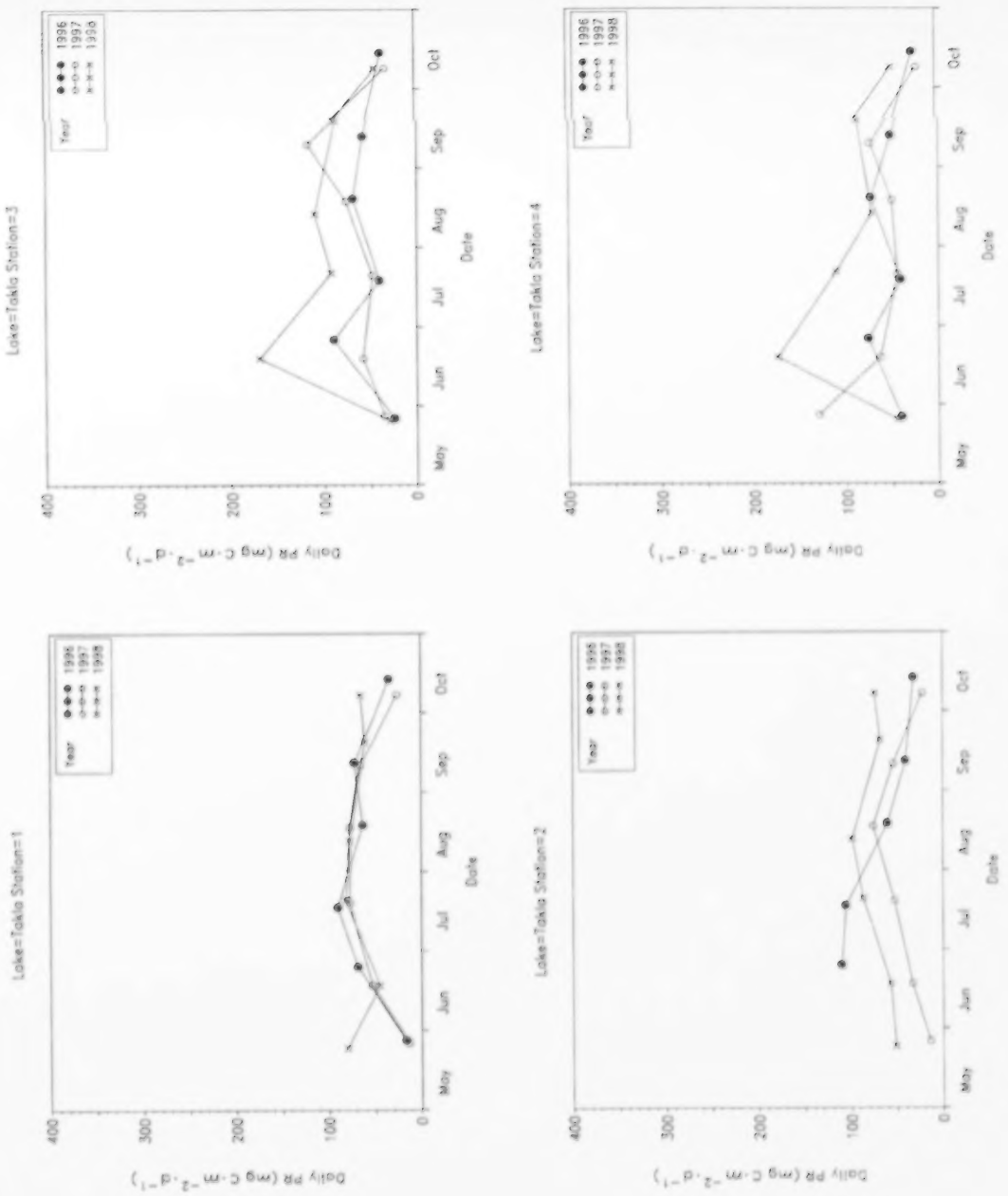

Fig. 8. Seasonal variation in mean epilimnetic photosynthetic rate for each station in Takla Lake.

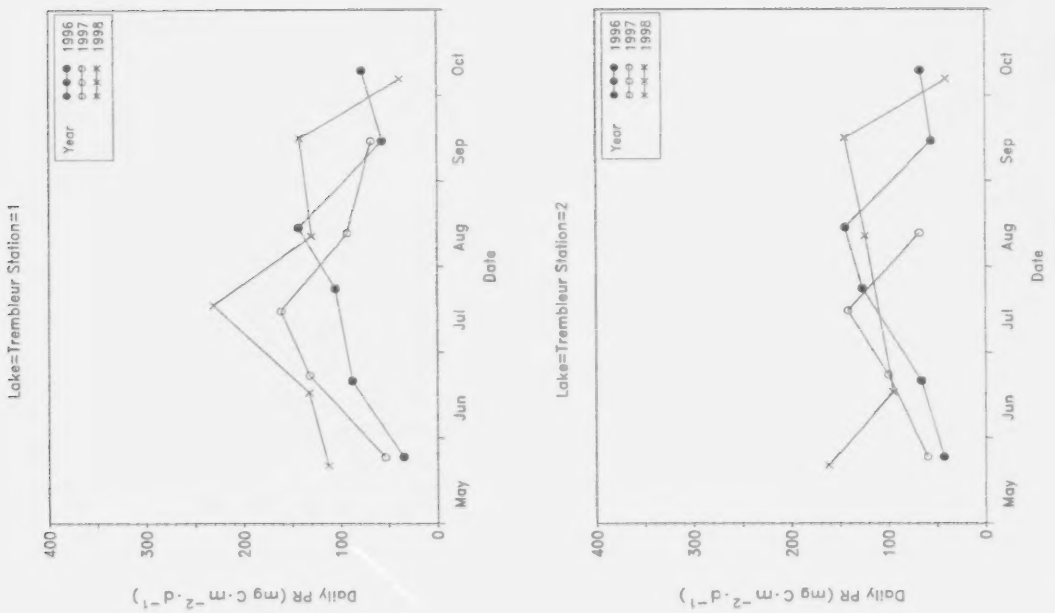

Fig. 9. Seasonal variation in mean epilimnetic photosynthetic rate for each station in Trembleur Lake.

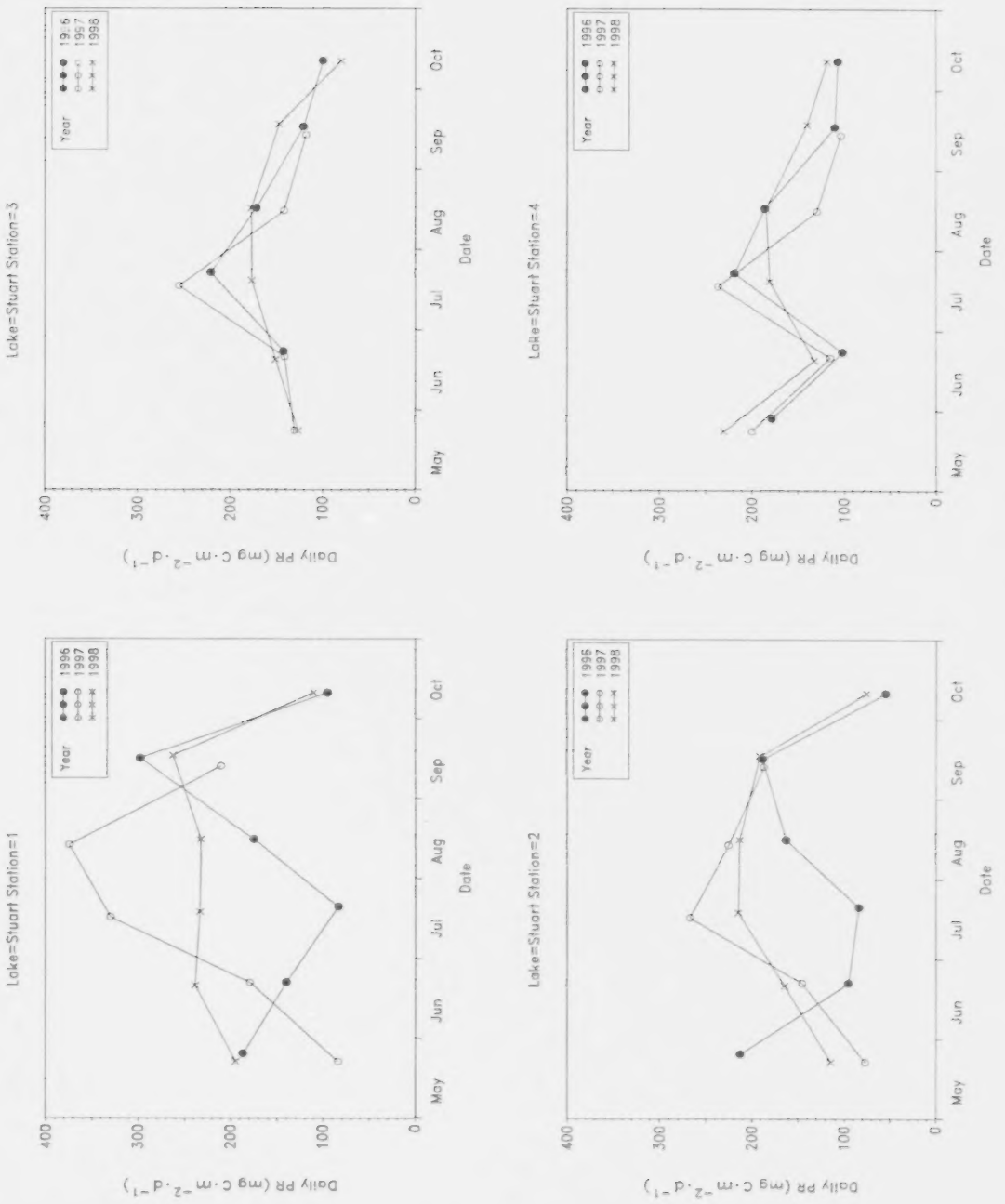

Fig. 10. Seasonal variation in mean epilimnetic photosynthetic rate for each station in Stuart Lake.

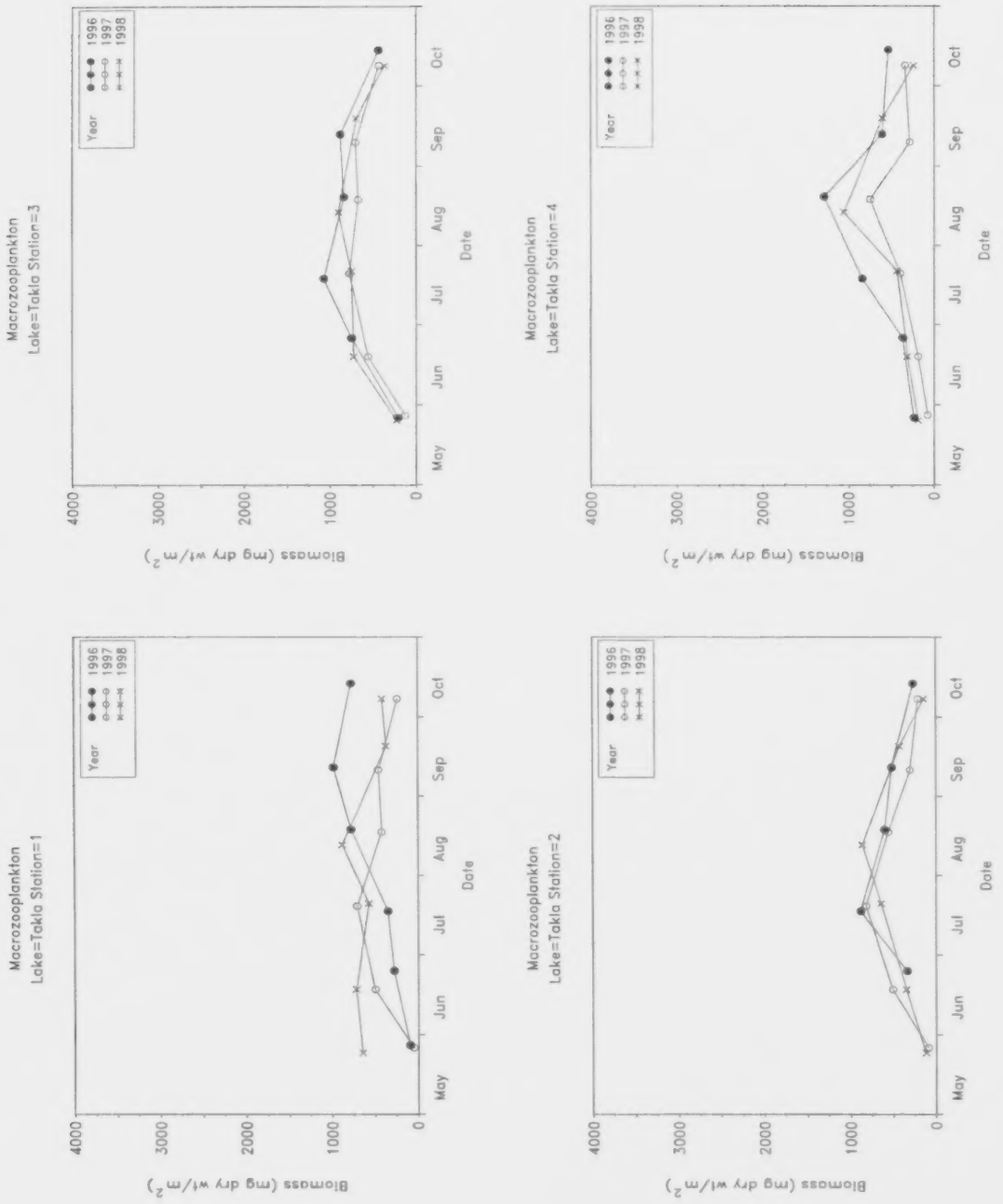

Fig. 11. Seasonal variation in macrozooplankton biomass for each station in Takla Lake.

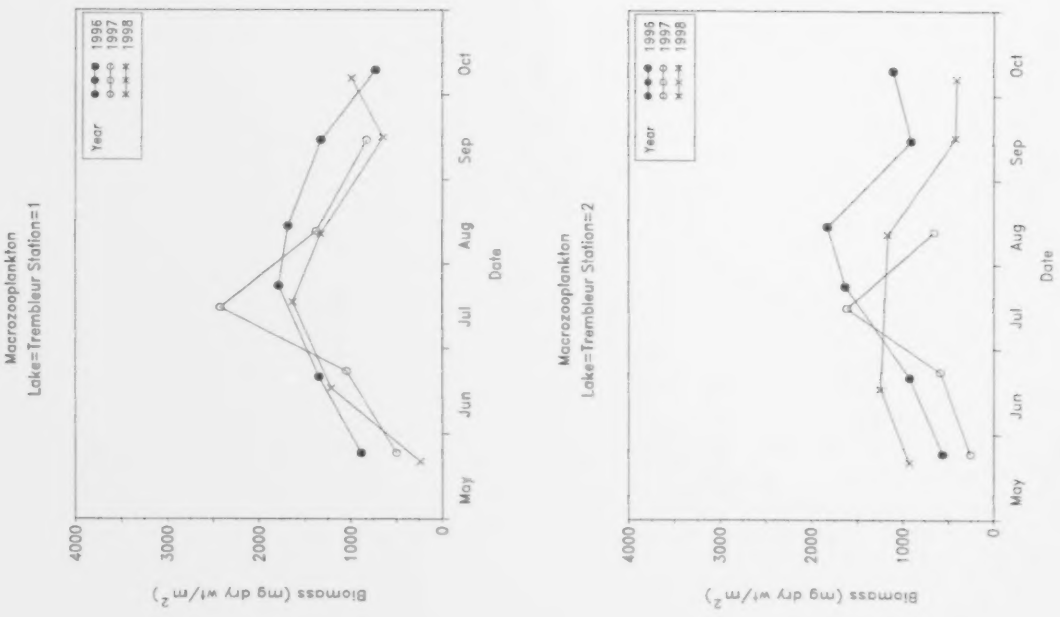

Fig. 12. Seasonal variation in macrozooplankton biomass for each station in Trembleur Lake.

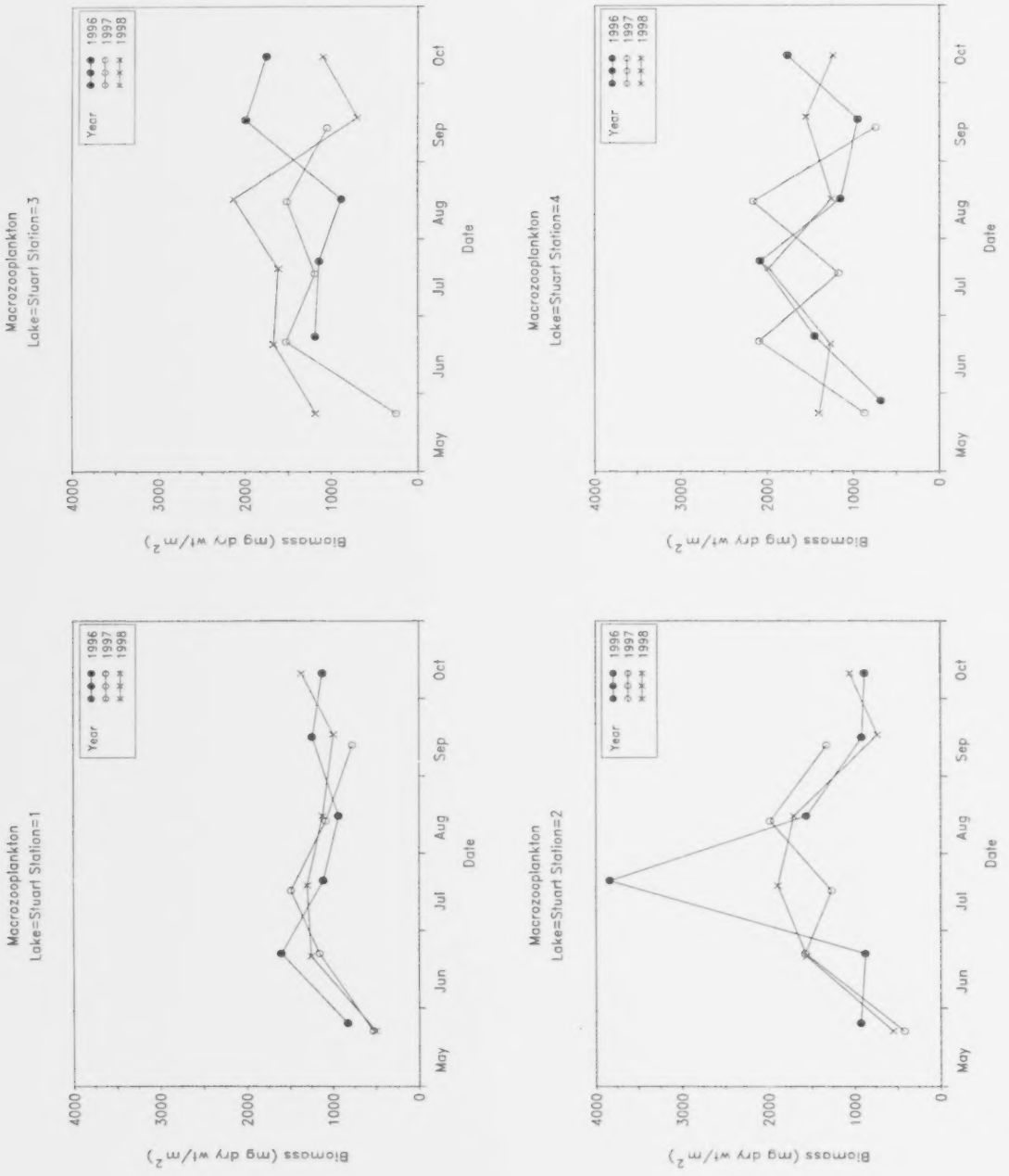

Fig. 13. Seasonal variation in macrozooplankton biomass for each station in Stuart Lake.

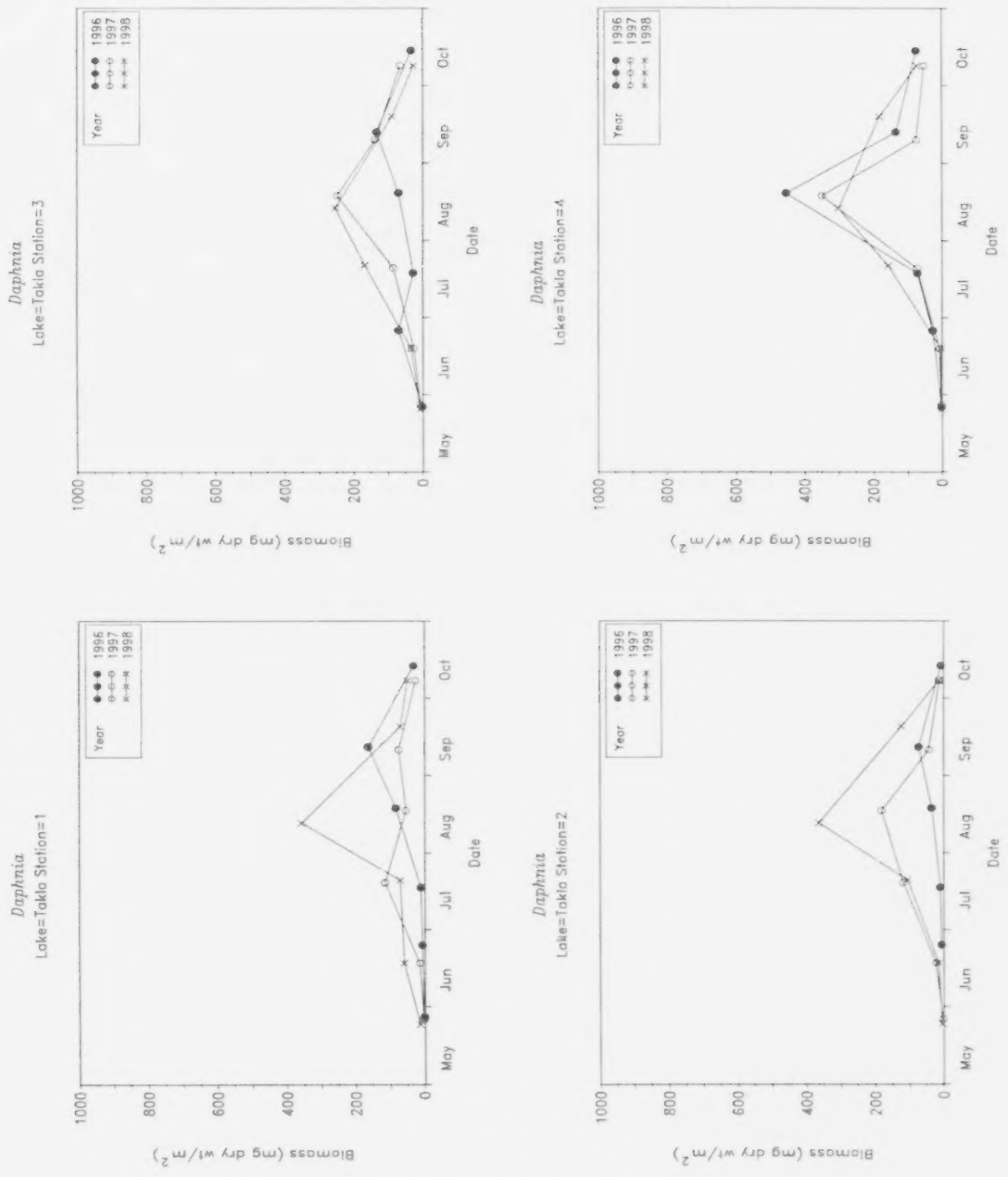

Fig. 14. Seasonal variation in *Daphnia* biomass for each station in Takla Lake.

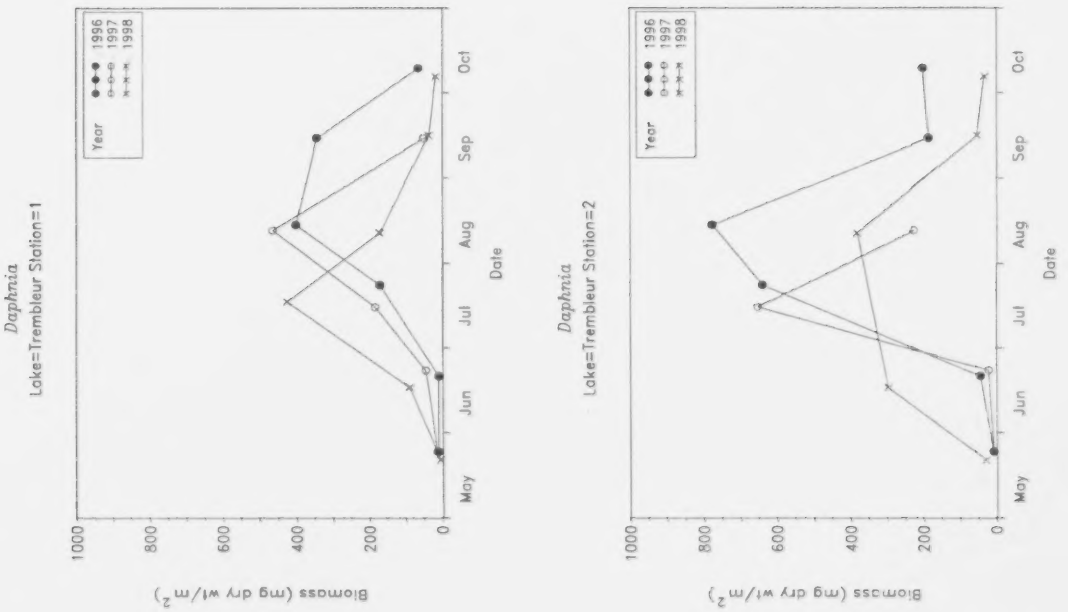

Fig. 15. Seasonal variation in *Daphnia* biomass for each station in Trembleur Lake.

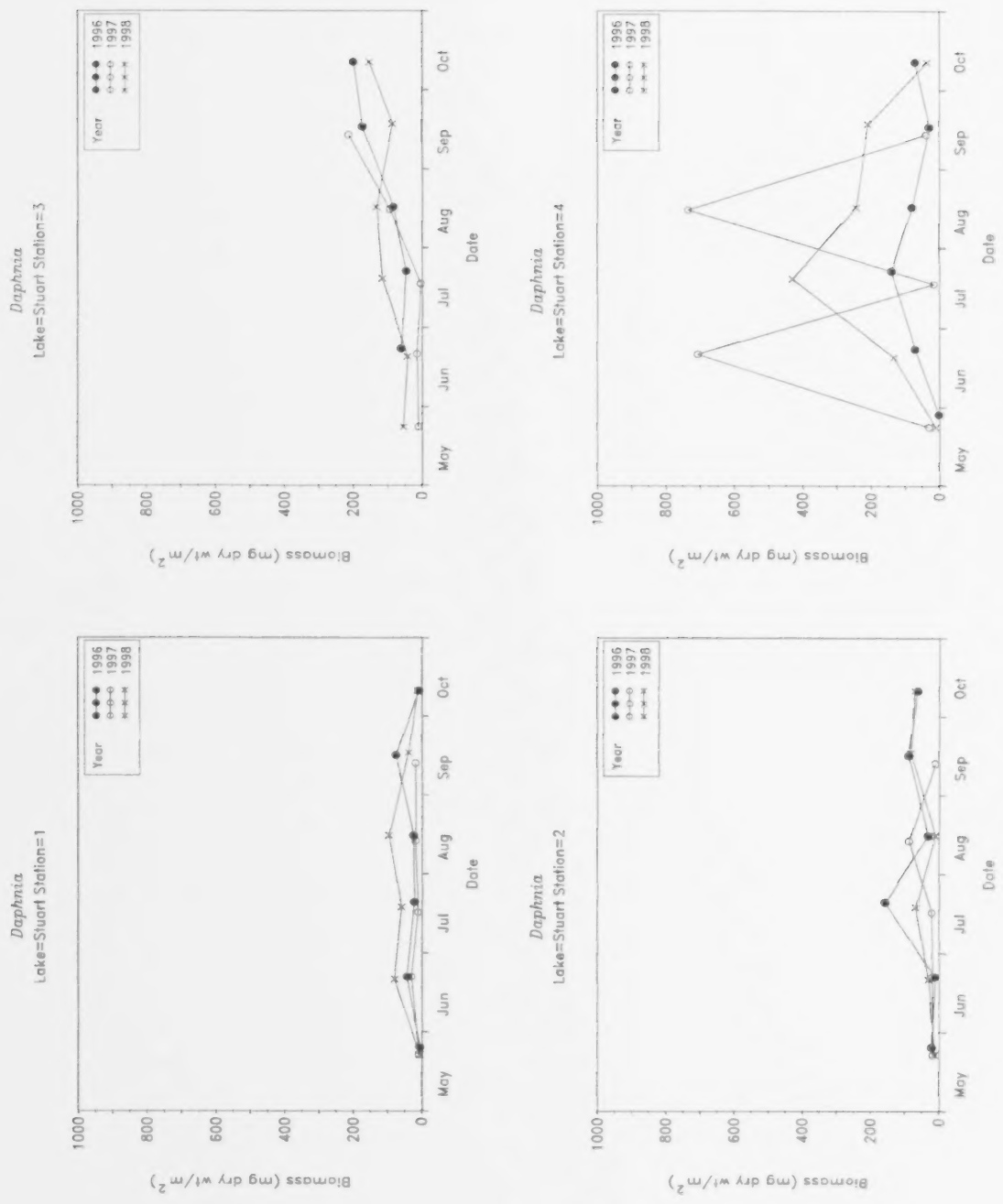

Fig. 16. Seasonal variation in *Daphnia* biomass for each station in Stuart Lake.

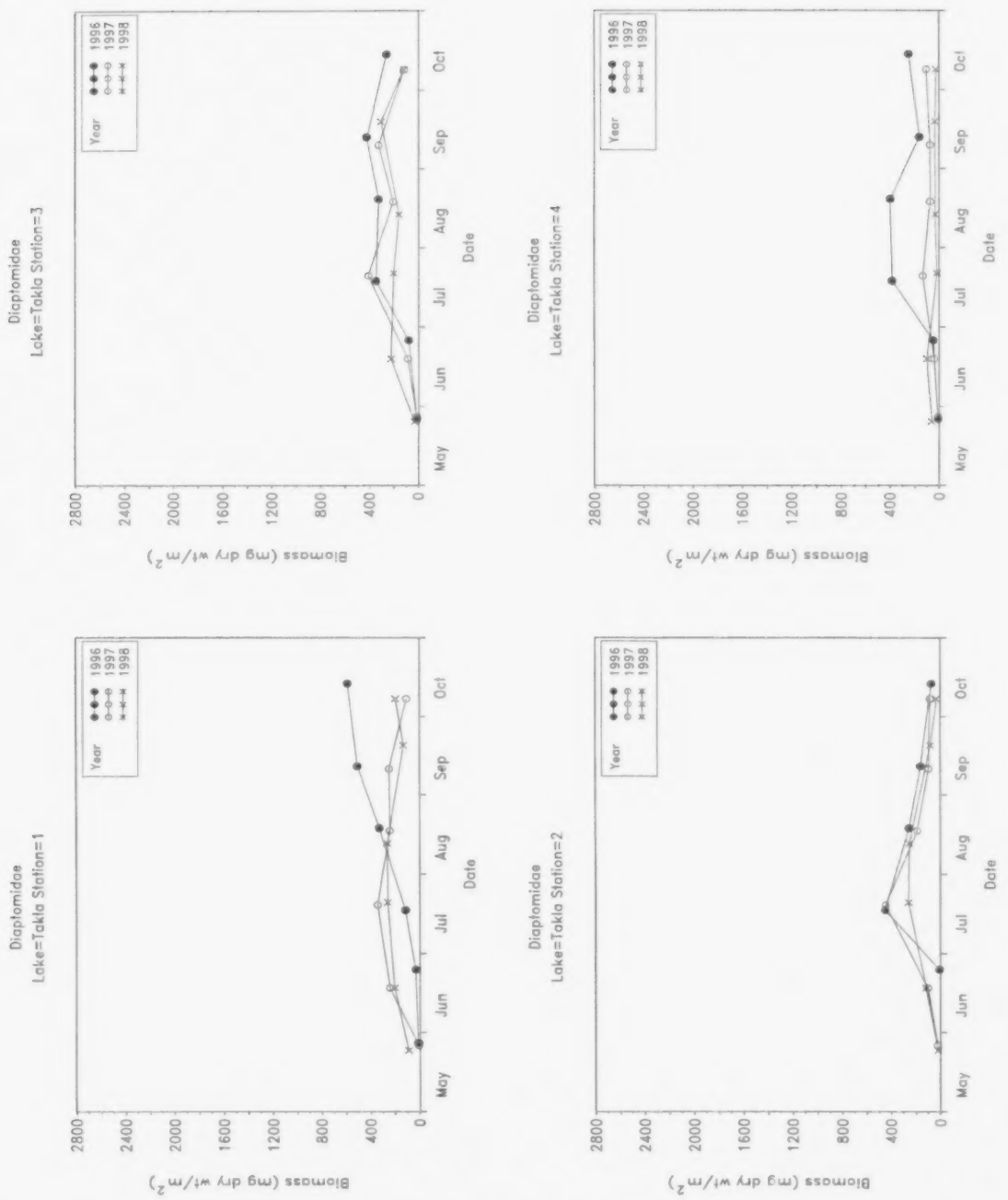

Fig. 17. Seasonal variation in Diaptomidae biomass for each station in Takla Lake.

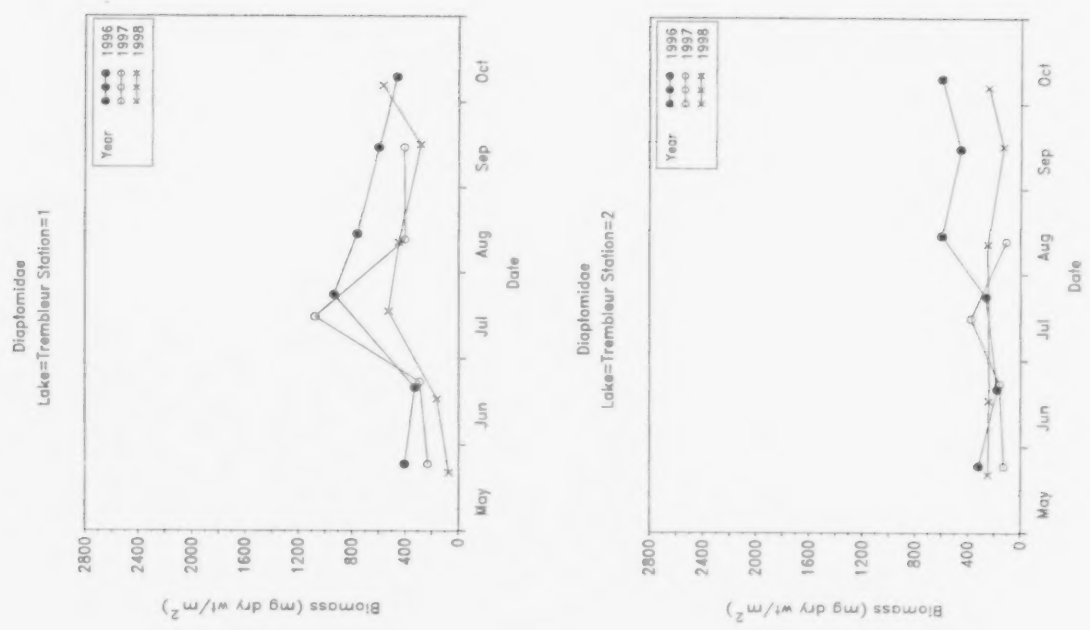

Fig. 18. Seasonal variation in Diaptomidae biomass for each station in Trembleur Lake.

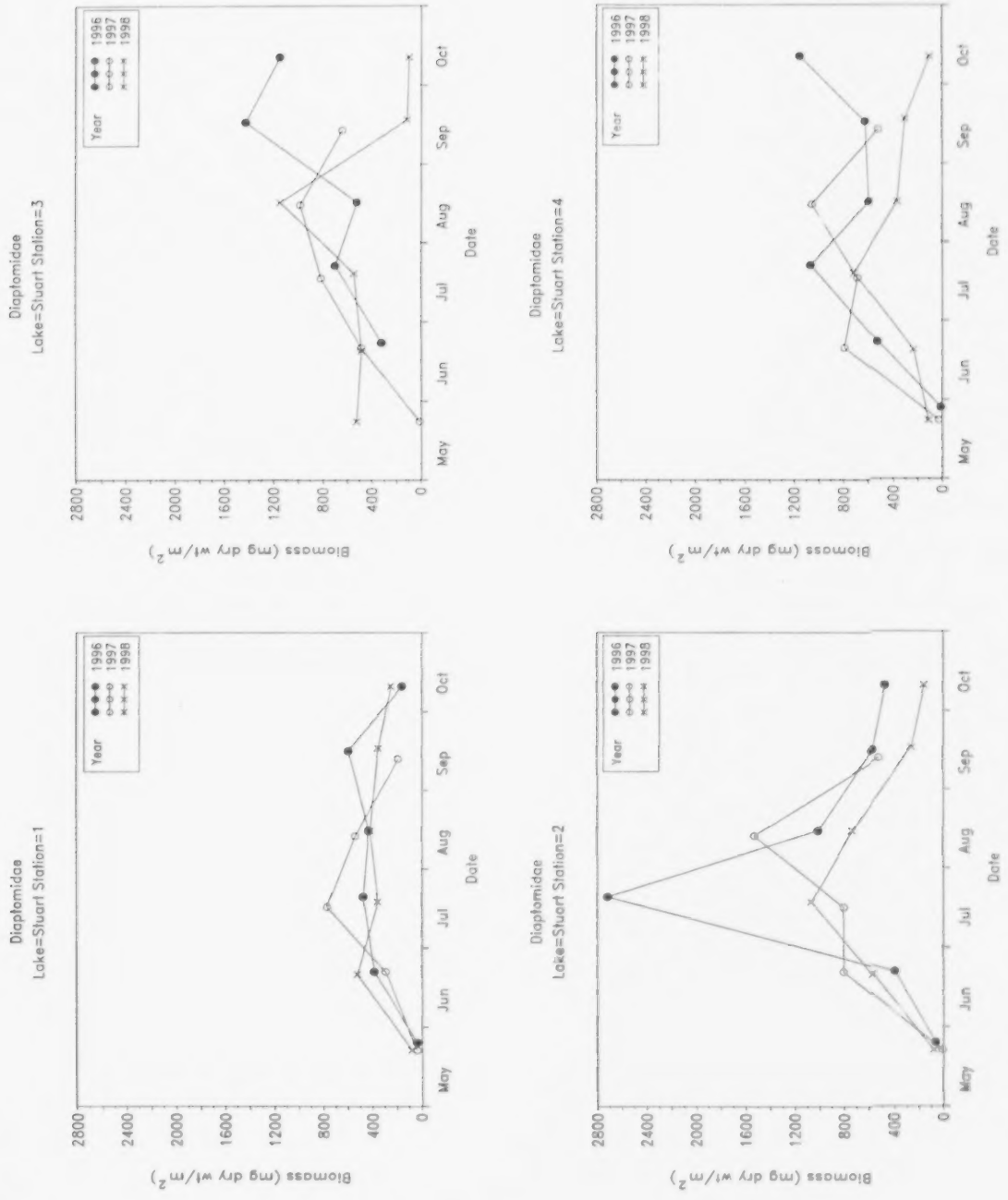

Fig. 19. Seasonal variation in Diaptomidae biomass for each station in Stuart Lake.

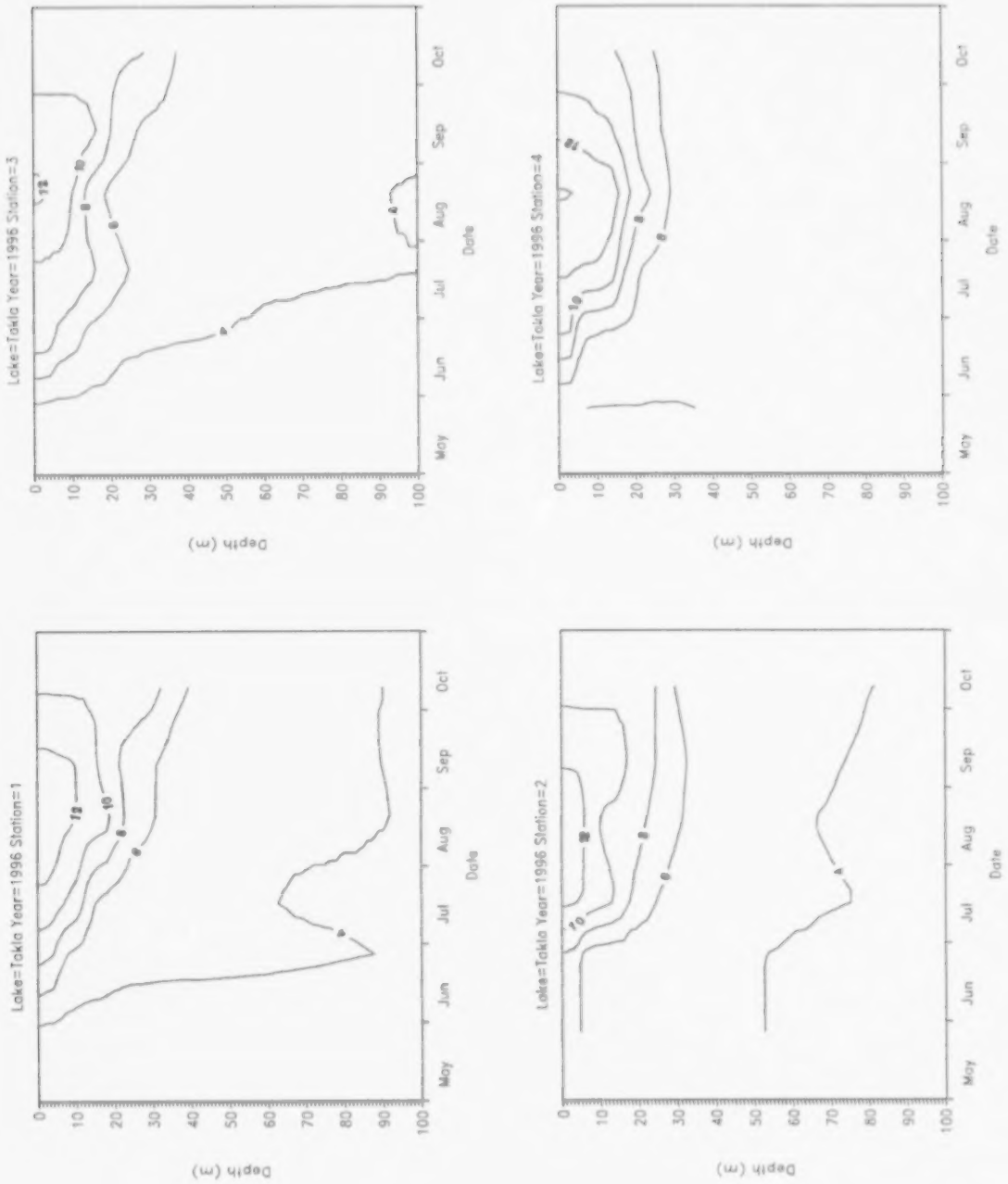

Fig. 20. Seasonal variation in thermal structure for each station in Takla Lake during the 1996 field season.

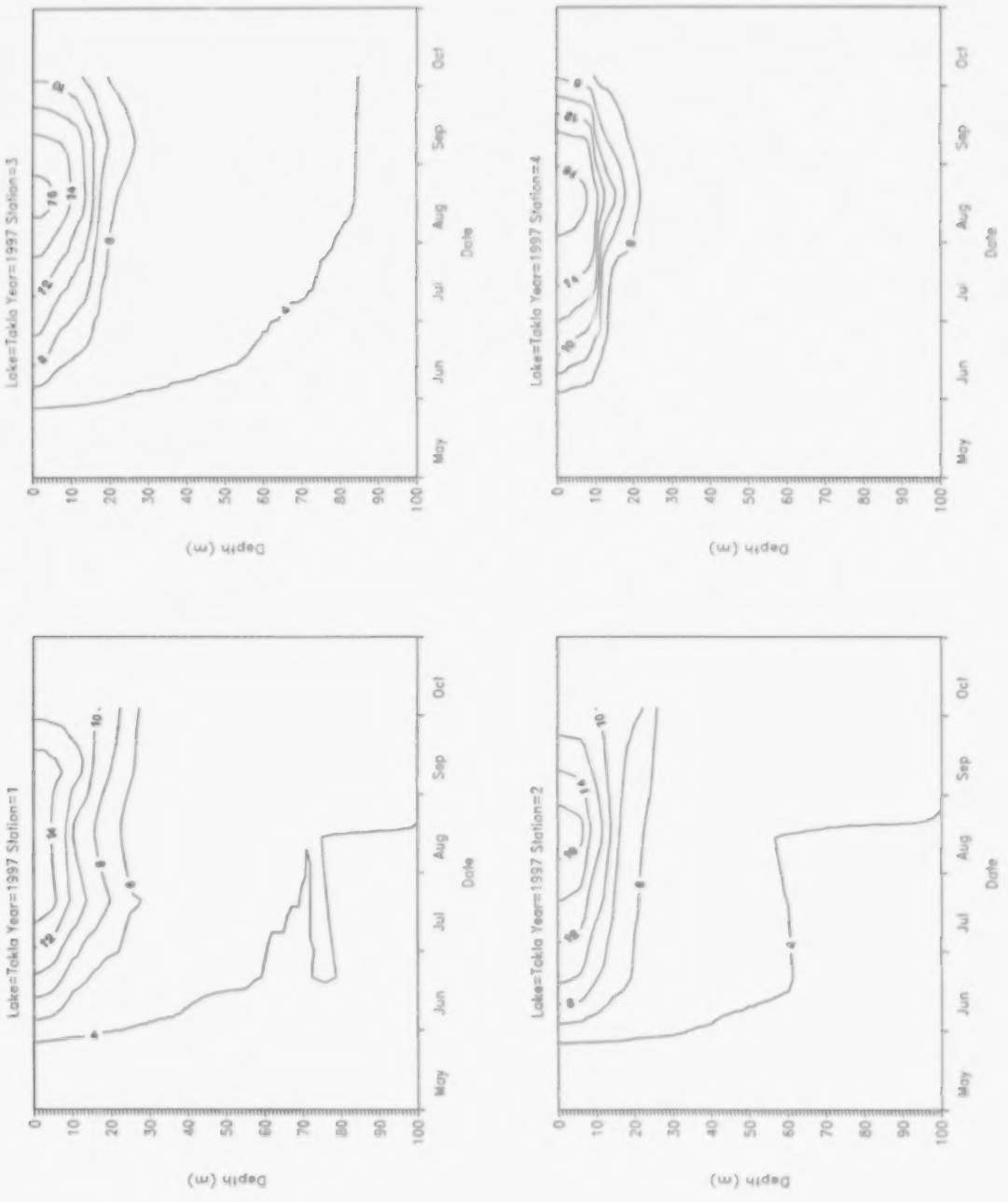

Fig. 21. Seasonal variation in thermal structure for each station in Takla Lake during the 1997 field season.

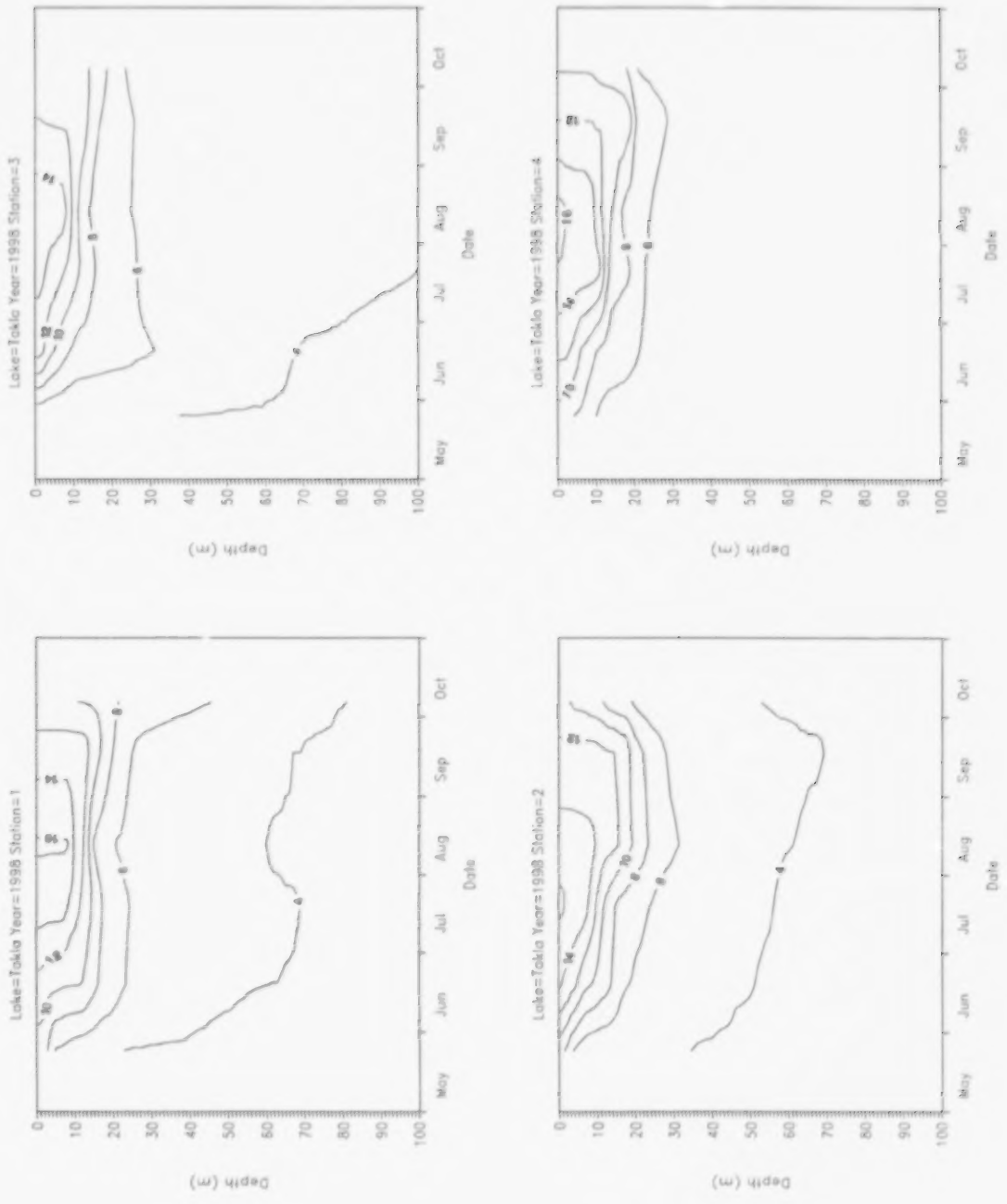

Fig. 22. Seasonal variation in thermal structure for each station in Takla Lake during the 1998 field season.

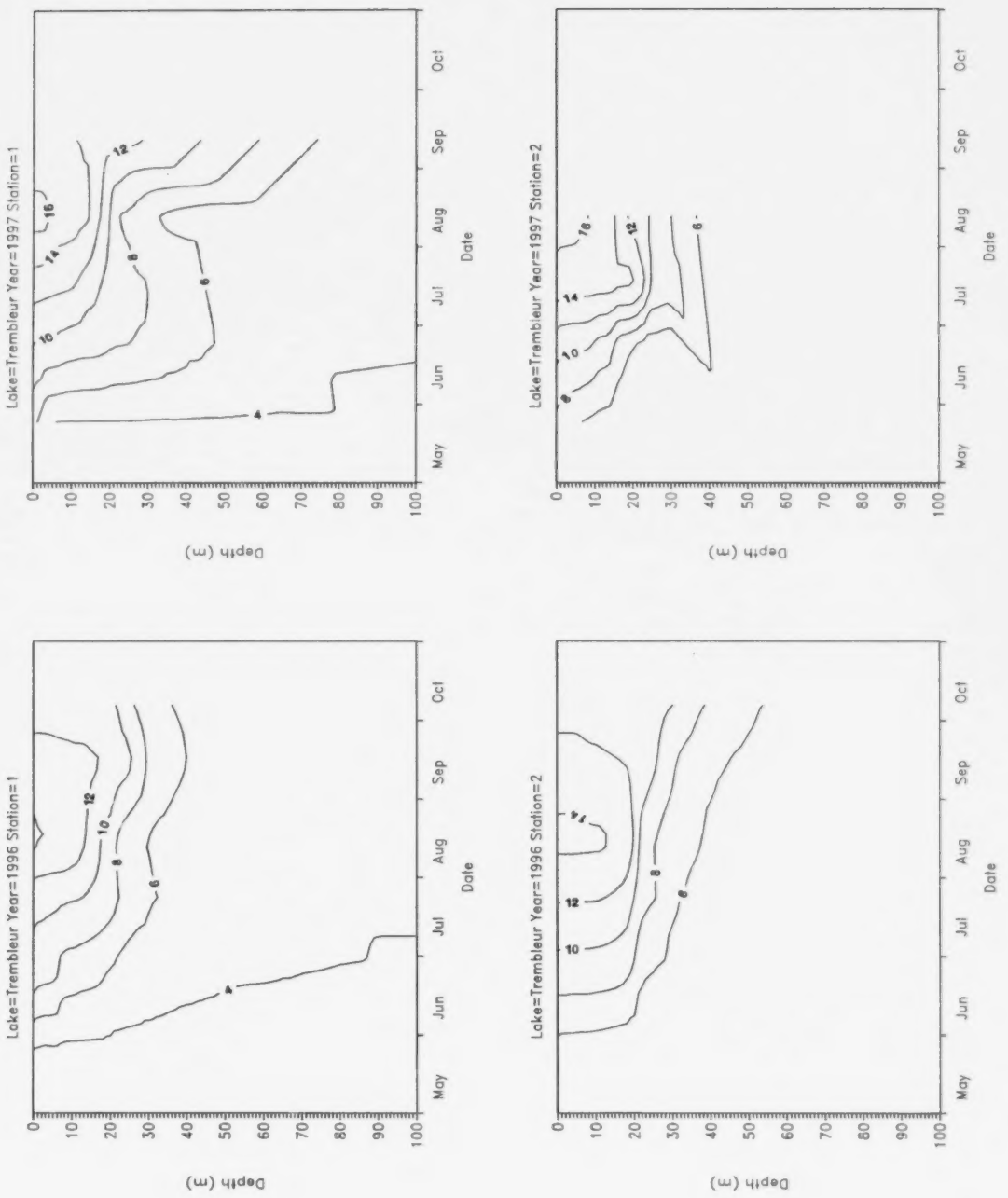

Fig. 23. Seasonal variation in thermal structure for each station in Trembleur Lake during the 1996 and 1997 field seasons.

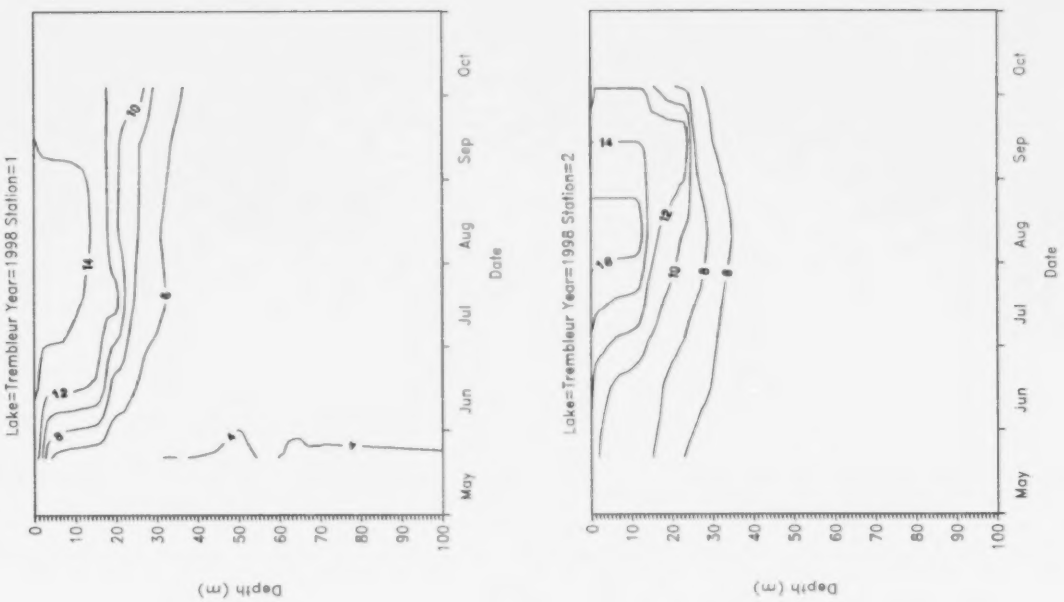

Fig. 24. Seasonal variation in thermal structure for each station in Trembleur Lake during the 1998 field season.

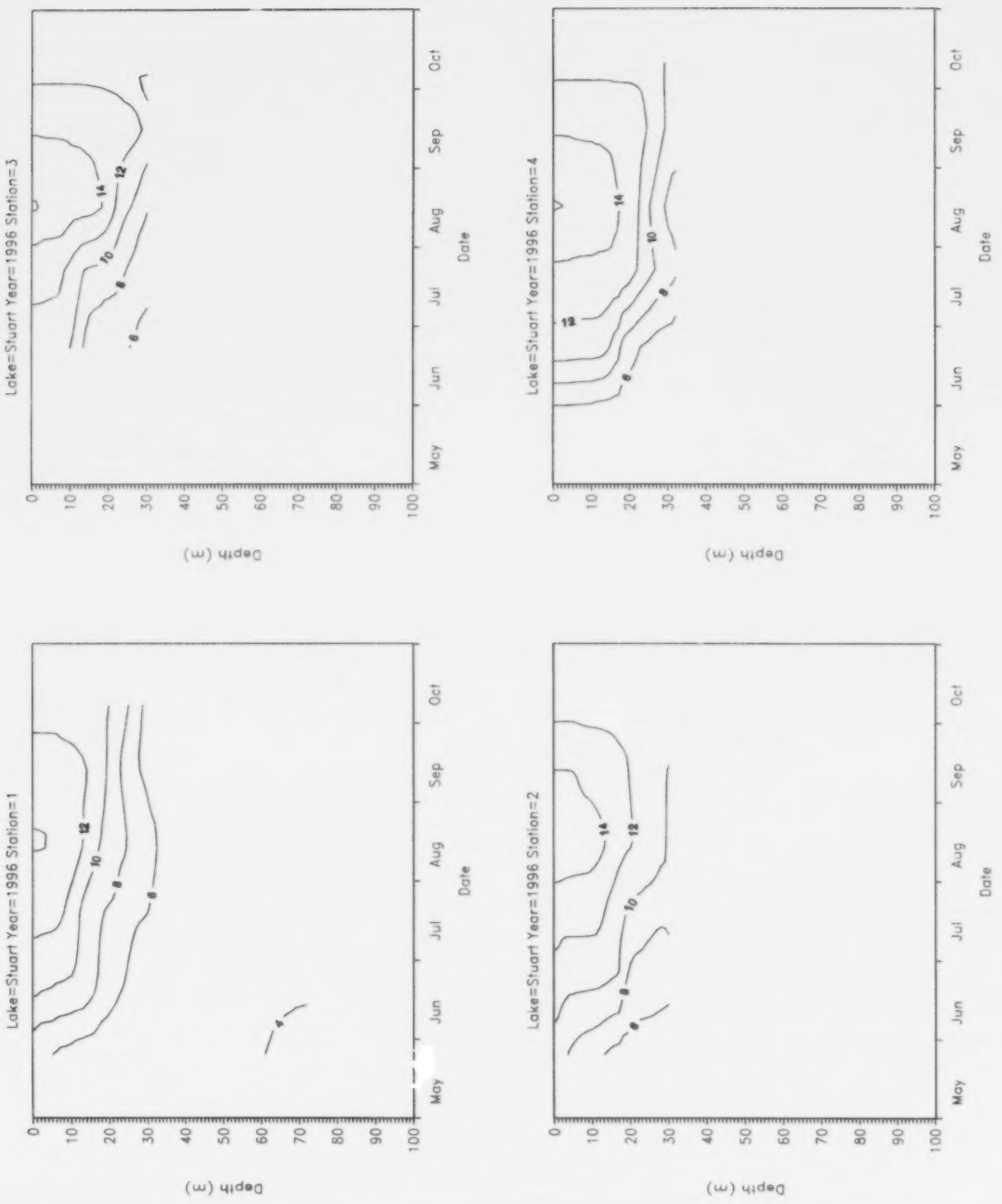

Fig. 25. Seasonal variation in thermal structure for each station in Stuart Lake during the 1996 field season.

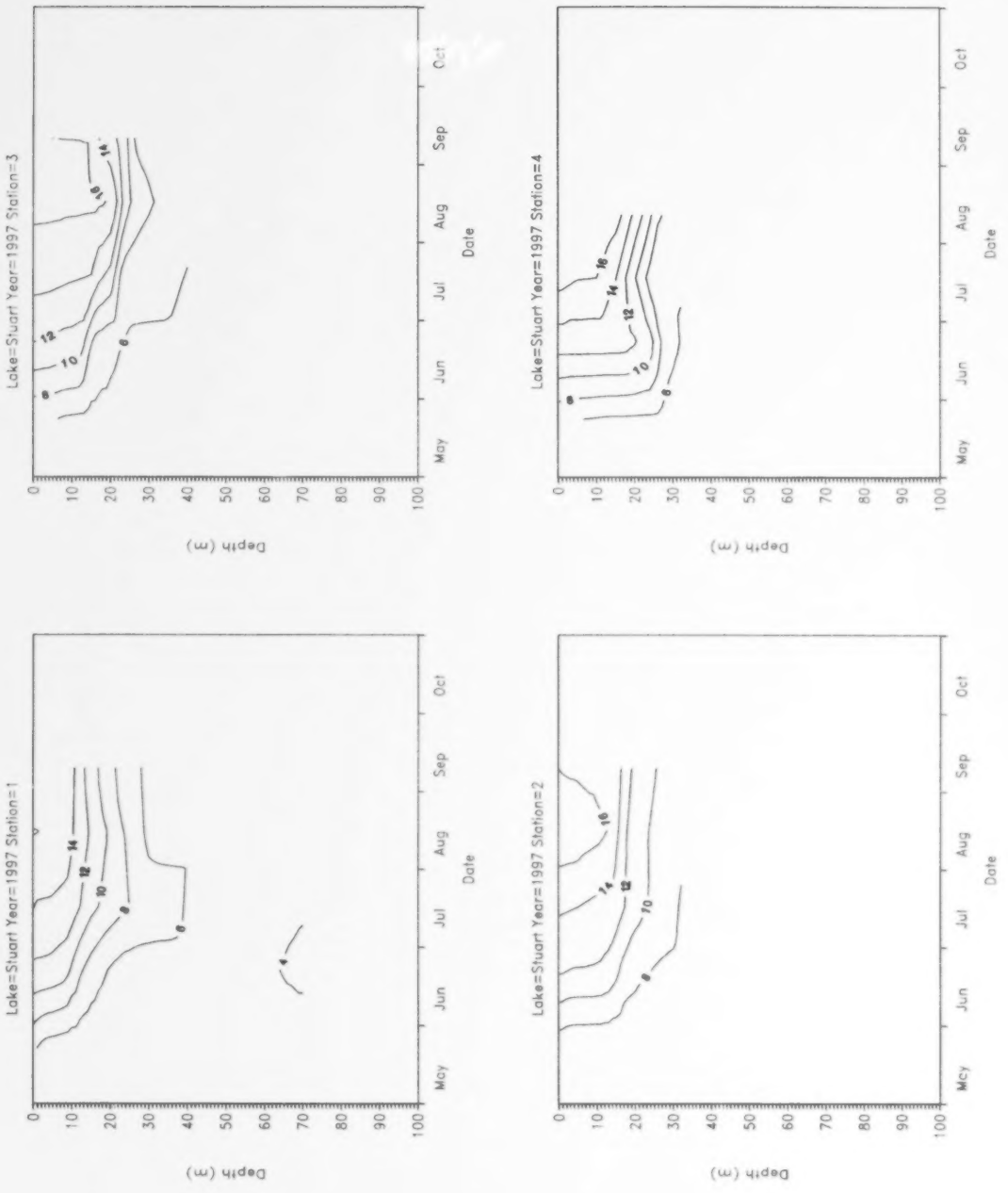

Fig. 26. Seasonal variation in thermal structure for each station in Stuart Lake during the 1997 field season.

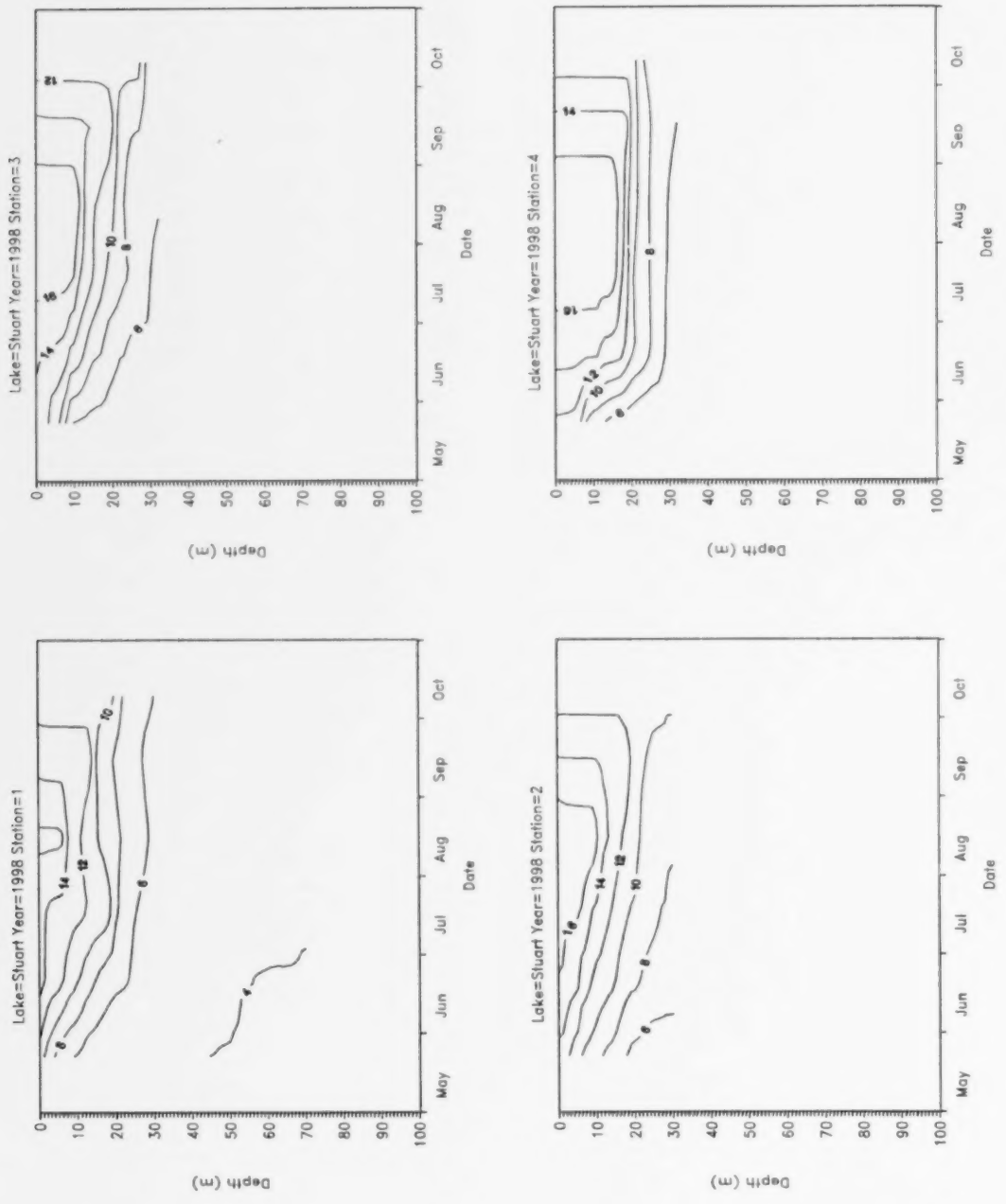

Fig. 27. Seasonal variation in thermal structure for each station in Stuart Lake during the 1998 field season.